SANITATION DISTRICT NO.1 OF LEWIS COUNTY

LEWIS COUNTY, KENTUCKY

REGIONAL WASTEWATER FACILITIES PLAN UPDATE

STATE OF KENTUCKY
J. F. SISLER
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PROFESSIONAL ENGINEER

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SISLER-MAGGARD ENGINEERING, PLLC
ENGINEERING • SURVEYING

220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KENTUCKY 40517
(859) 271-2978 FAX (859) 271-5670

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SECTION 1
REGIONAL FACILITY PLAN SUMMARY

1.1 INTRODUCTION AND BACKGROUND

The Lewis County Sanitation District No. 1 (Lewis Co. SD1) owns and operates a wastewater system in the Tollesboro area approximately sixteen miles west of Vanceburg. The wastewater treatment plant was constructed in 2000 and is designed for an average daily flow of 0.125 mgd. It is currently receiving approximately 60% of that design from its 550 customers.

This plan establishes the revised facilities planning area boundary and identifies the most cost-effective and environmentally sound wastewater facilities. The planning area boundaries are shown on Fig. 1-1, Planning Area Map.

Many in western Lewis County are not currently on a public wastewater system and rely on private systems that are failing due to poor soil quality in the area or inadequate maintenance. Citizens complain of polluted groundwater and raw sewage running into ditches and drainage ways. Raw sewage on the ground and in ditches is commonplace throughout the unsewered areas posing a serious health hazard for the communities involved. A survey of the small communities in the area has shown most residents to be in support of the project.

1.2 PURPOSE OF THIS PLAN

State regulations require all wastewater agencies to submit a Regional Facilities Plan or Asset Inventory Report every ten years; or when an agency is planning on expanding the existing wastewater treatment plant by thirty percent or building a new facility/discharge. These requirements are contained in 401 KAR 5:006.

The goals of this Facilities Plan include:

- Evaluation of the existing wastewater collection and treatment system to assess physical condition and capacity.
- Evaluation of current and future requirements and regulations of regulatory authorities.
- Evaluate alternatives to address current situations and future requirements.
- Develop a plan for wastewater service, in compliance with 401 KAR 5:006, to enable Lewis Co. SD1 to meet the future needs of the system.
- Address the environmental impact of the system with and without the recommendations.
- Solicitation of input from the public regarding the needs of the system, as required by regulations.
- Describe Lewis Co. SD1's recommended implementation and funding plan for the selected alternatives and present the estimated revenue and user fee requirements necessary to support implementation.

- Document the completion of the required environmental, archeological, and historic preservation cross cutter agency review requests.

1.3 RECOMMENDED PLAN

This Plan considered three alternatives for the collection system:

Alternative A: Gravity Sewer System,
Alternative B: Low Pressure Sewer System, and
Alternative C: Combined Gravity and Low Pressure Sewer System.

Three treatment system alternatives were also evaluated:

Alternative A: Extended Aeration
Alternative B: Aerated Lagoons
Alternative C: Pumping Wastewater to Vanceburg for Treatment

This Plan describes the components of the collection system and treatment system alternatives. Physical descriptions and present worth costs for each alternative are presented. The selected plan represents the most cost-effective and environmentally sound alternative for the 20 year planning period.

Alternative B: Low Pressure Sewer System is the recommended collection system alternative based on the data evaluated. This system will be composed of approximately 5,600 feet of 8" force main, 3,300 feet of 6" force main, 26,000 feet of 3" force main, 16,200 feet of 2" force main, 12,020 feet of 1 1/2" force main, 42,100 feet of 1 1/4" force main, 210 grinder pump stations, and increase the capacity of three lift/pump stations.

The selected alternative for treatment is Alternative B: Aerated Lagoons. The treatment facility will be designed for an average flow of 200,000 gpd to meet the anticipated needs throughout the twenty year planning period. This alternative consists of screening, two aerated lagoons, a polishing reactor, and disinfection as illustrated in Fig. 1-3. This alternative will be designed to meet secondary treatment limits, including nitrogen removal, provide sludge volume reduction, and meet regulatory requirements.

The recommended plan is proposed to be implemented in phases (see Fig. 1-2):

Phase I (0 – 2 Years)
Wastewater Treatment Plant Improvements
Extend Sewer Service Along S.R. 10 to the Mason County Line

Phase II (3 – 10 Years)
Extend Sewer Service to the Burtonville Area

Phase III (11 – 20 Years)
Extend Sewer Service to other outlying areas

1.4 SUMMARY OF COSTS FOR THE RECOMMENDED PLAN

The selected alternative is considered the most cost-effective option because it has the lowest present worth cost, the least negative environmental impact and provides equal or greater benefits compared with the other alternatives.

Table 1-1
Estimated Cost of Recommended Plan
Lewis County Sanitation District No. 1

Phase I		
Contract No. 6 - Wastewater Treatment Plant Expansion (0.2 MGD)		$1,073,000
Contract No. 7 - Sewer Lines, Force Main, and Individual Grinder Pumps along S.R. 10 to Mason County line (approx. 62 customers)		550,000
Contingency – Phase I (10%)		162,300
Subtotal Construction Cost – Phase I		$1,785,300
Project Development		
Phase I Engineering ($105,000 + 55,000)	$317,000	
Phase I Legal/Administrative ($20,000 + 15,000)	35,000	
Phase I BTADD Admin. Fee ($25,000 +15,000)	40,000	
Phase I Miscellaneous ($32,000 + 4,000)	36,000	
Subtotal Project Development Fees – Phase I		$ 428,000
TOTAL Project Cost – Phase I		$2,213,300
Phase II		
Contract No. 8 - Sewer Lines, Force Mains, Pump Station and Individual Grinder Pumps – Burtonville (approx. 148 customers)		$1,478,800
Contingency – Phase II (10%)		147,900
Subtotal Construction Cost – Phase II		$1,626,700
Project Development		
Phase II Engineering	$232,000	
Phase II Legal/Administrative	23,000	
Phase II BTADD Admin. Fee	24,000	
Phase II Miscellaneous	5,000	
Subtotal Project Development Fees – Phase II		$ 284,000
TOTAL Project Cost – Phase II		$1,910,700
Total Project Cost – Recommended Plan (Phases I & II)		**$4,124,000**

1.5 FUNDING

The recommended plan offers less negative financial impact (investment and rate structure) upon sewer users. It is expected rates will go from $38.65 to $43.20 per month per customer for an average 4,000 gallons per month usage.

The majority of funding for Phase I is expected through grants and loans as shown in Table 1-2.

Table 1-2
Phase I Proposed Project Funding

Funding Source	Amount
USDA Rural Development Loan	$ 766,000
USDA Rural Development Grant	350,000
Appalachian Regional Commission Grant	250,000
Community Development Block Grant	750,000
Local tap fees - 62 total (38 LMI + 24@$500=)	12,000
District	85,300
TOTAL FUNDING	$2,213,300

Phase II is expected to follow a similar funding scenario.

1.6 IMPLEMENTATION SCHEDULE

The following implementation schedule is proposed for Phase I.

Activity	Anticipated Completion Date
Regional Facilities Plan Submittal	July 2014
Design Review and Approval	August 2014
Conditional Loan Commitment (RD)	December 2014
Construction Bidding	January 2015
Construction Complete	October 2015
Construction Closeout	November 2015

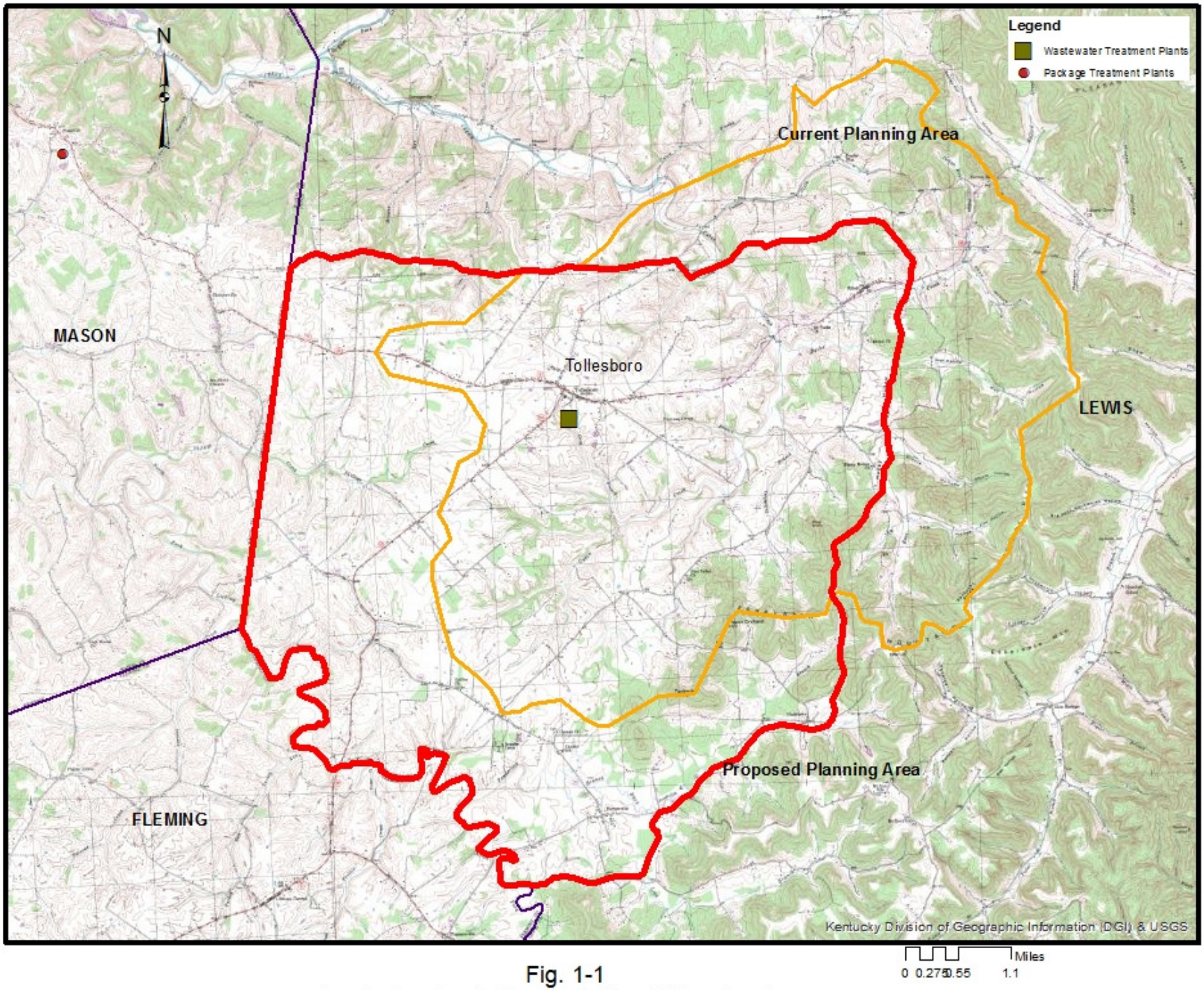
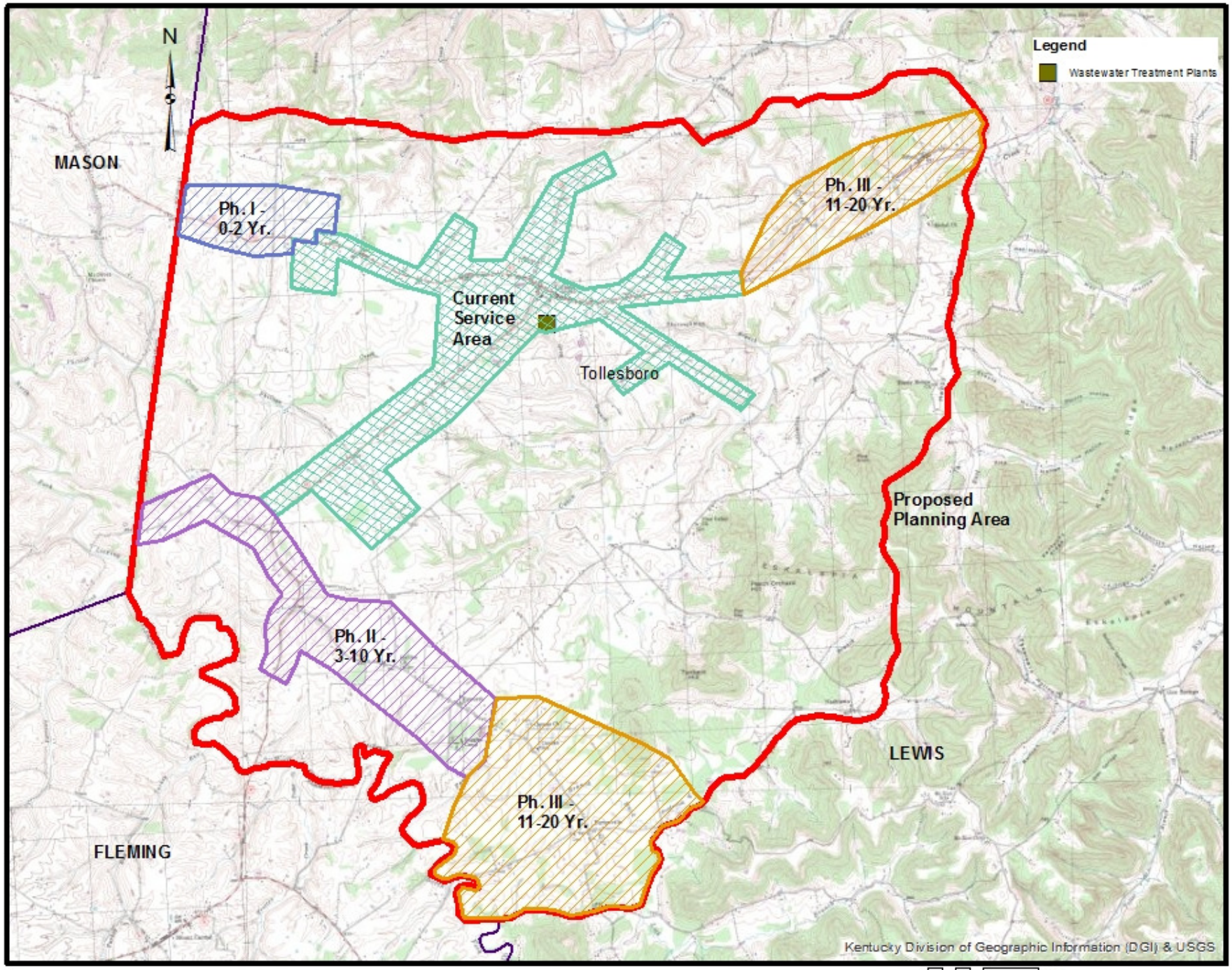


Fig. 1-1
Lewis Co. Sanitation Dist. No. 1 Planning Area



Miles
0 0.225 0.45 0.9

Fig. 1-2
Proposed Phases
Lewis Co. Sanitation Dist. No. 1

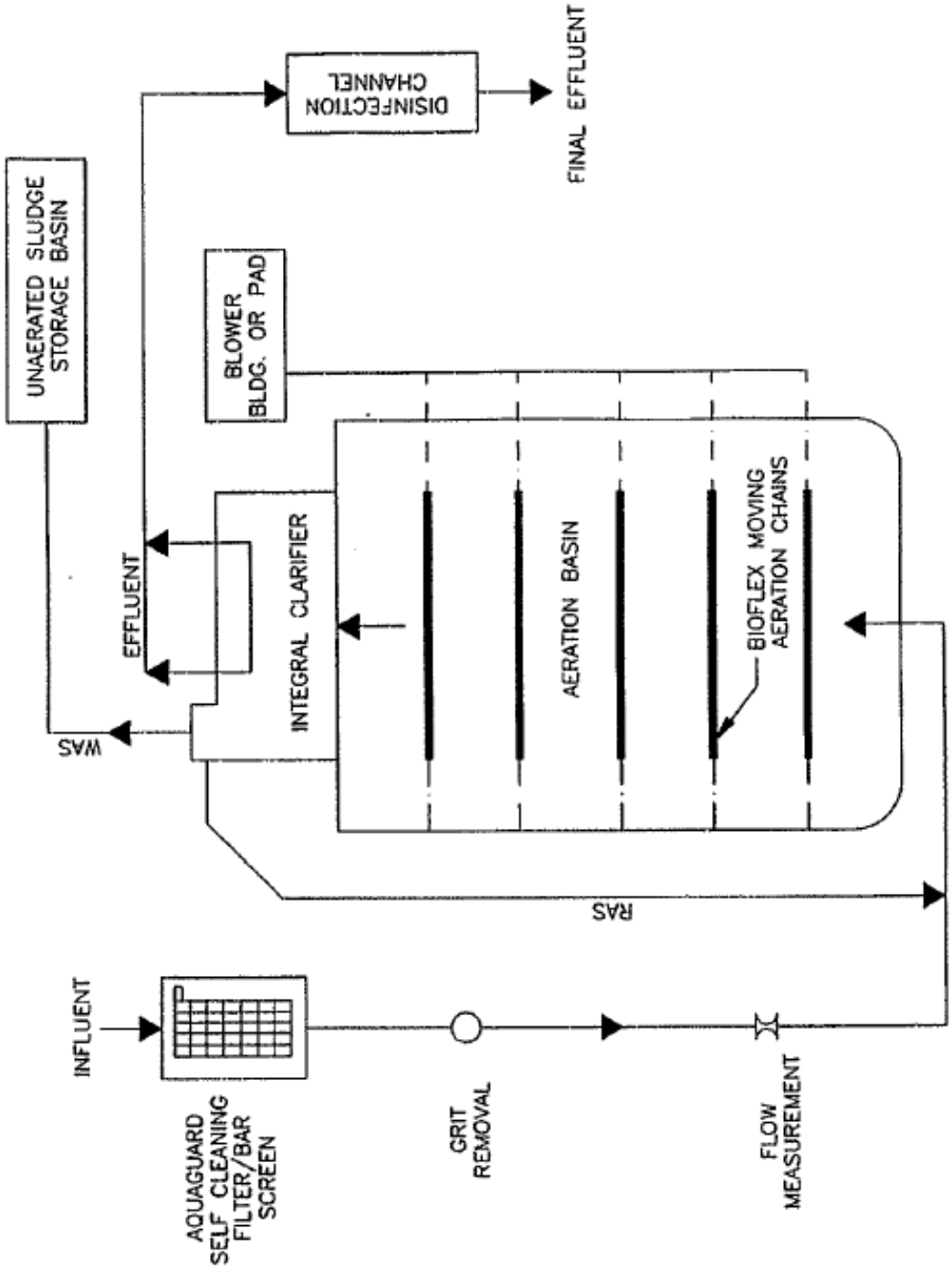


Fig. 1-3
Selected Treatment Alternative
Lewis County Sanitation District No. 1

SECTION 2
STATEMENT OF PURPOSE AND NEED

2.1 UNSERVED AREAS

Some citizens of western Lewis County are not currently on a public wastewater system and rely on private sewer systems. Due to unsuitable soil conditions and shallow bedrock the on-site systems do not function well. Many homes were constructed before the plumbing code required on-site septic systems and many lots are too small to permit septic systems. The result is that raw sewage reaches the surface of the ground in low areas and in road side ditches, creating a health hazard for the community.

These problems can create health hazards by allowing human waste to appear on the ground, in streets, sidewalks, and open ditches. Also, various economic hardships are placed on low to moderate income households because of their attempts to keep their septic system from malfunctioning. The Lewis County Health Department has determined that many lots are unsuitable for conventional septic systems.

Additional evidence from county officials and numerous community residents confirms a number of problems with waste disposal in the community. Community practices resulting from these conditions include draining of washing machines directly into drainage ditches to bypass septic systems, night time discharge on holding tanks into drainage ditches, and discharge of septic or holding tanks into abandoned wells to by-pass dysfunctional filter field systems or lack thereof. Citizens complain of polluted groundwater and raw sewage running in the ditches of the highways and drainage ways. The direness of the situation has been confirmed through written communications from the Lewis County Health Department (see appendices).

While counties in this area are somewhat poverty stricken, a basic need for working sewage systems continues to be a major issue that must be addressed by the regional planning agency to protect public health and the environment.

2.2 EXISTING WASTEWATER SYSTEM

The Lewis Co. SD1 provides wastewater treatment to the Tollesboro community utilizing a 125,000 gallon per day (gpd) lagoon treatment plant. For 2013, the plant treated an average daily flow of 74,000 gpd, or 60% of the plant's design hydraulic capacity. Despite the moderate hydraulic loading, the plant has had problems meeting the KPDES permit limits, particularly for Ammonia-nitrogen, as evidenced by Notices of Violation (NOVs) issued by the Department for Environmental Protection (DEP).

2.3 WASTEWATER DEMAND

Lewis Co. SD1 currently has approximately 550 residential customers, but anticipates serving approximately 620 residential customers by 2016. This would result is a population of approximately 1360 based on the 2010 Census data indicating 2.2 persons per house. Water usage records indicate significantly less than the 100 gallons per capita per day (gpcd) as directed in *Recommended Standards for Wastewater Facilities* (*Ten States Standards*). Based on this information, flow is projected to be in the range of 0.103 million gallons per day (mgd).

Phase II is expected to add another 132 customers in the Burtonville area and 80 customers in Ribolt. This would result in an approximate flow of 0.155 mgd by 2025. Additional growth/expansion through the end of the twenty year planning period should result in an expected flow of 0.190 mgd. Future projected flows are well above the current average design flow of 0.125 mgd.

SECTION 3
PHYSICAL CHARACTERISTICS OF THE PLANNING AREA

3.1 INTRODUCTION

This chapter describes the planning area by identifying and analyzing its geophysical and environmental components. The purpose of this chapter is to develop base data and maps to be used in the land use assessment.

3.2 PLANNING AREA

The Lewis County SD1 planning area is located in western Lewis County on the Mason County line. It includes the communities of Tollesboro, Ribolt and Burtonville. The original planning area established in 1974 included only the areas along major roadways in Tollesboro. This boundary was significantly expanded in a subsequent Facilities Plan in 1997. Based on current and projected populated places within western Lewis County, revisions to the planning area have been proposed to provide service to those areas. See Fig. 3-1.

3.3 LAND USE

The *2008 Comprehensive Plan for Lewis County* reports that most of Lewis County is rural and considered agriculture and low-density residential as illustrated in Fig. 3-2. The planning area has areas of concentrated housing in unincorporated areas such as Tollesboro, Burtonville, and Ribolt. Industrial land use is planned in the industrial park under development in the Tollesboro area.

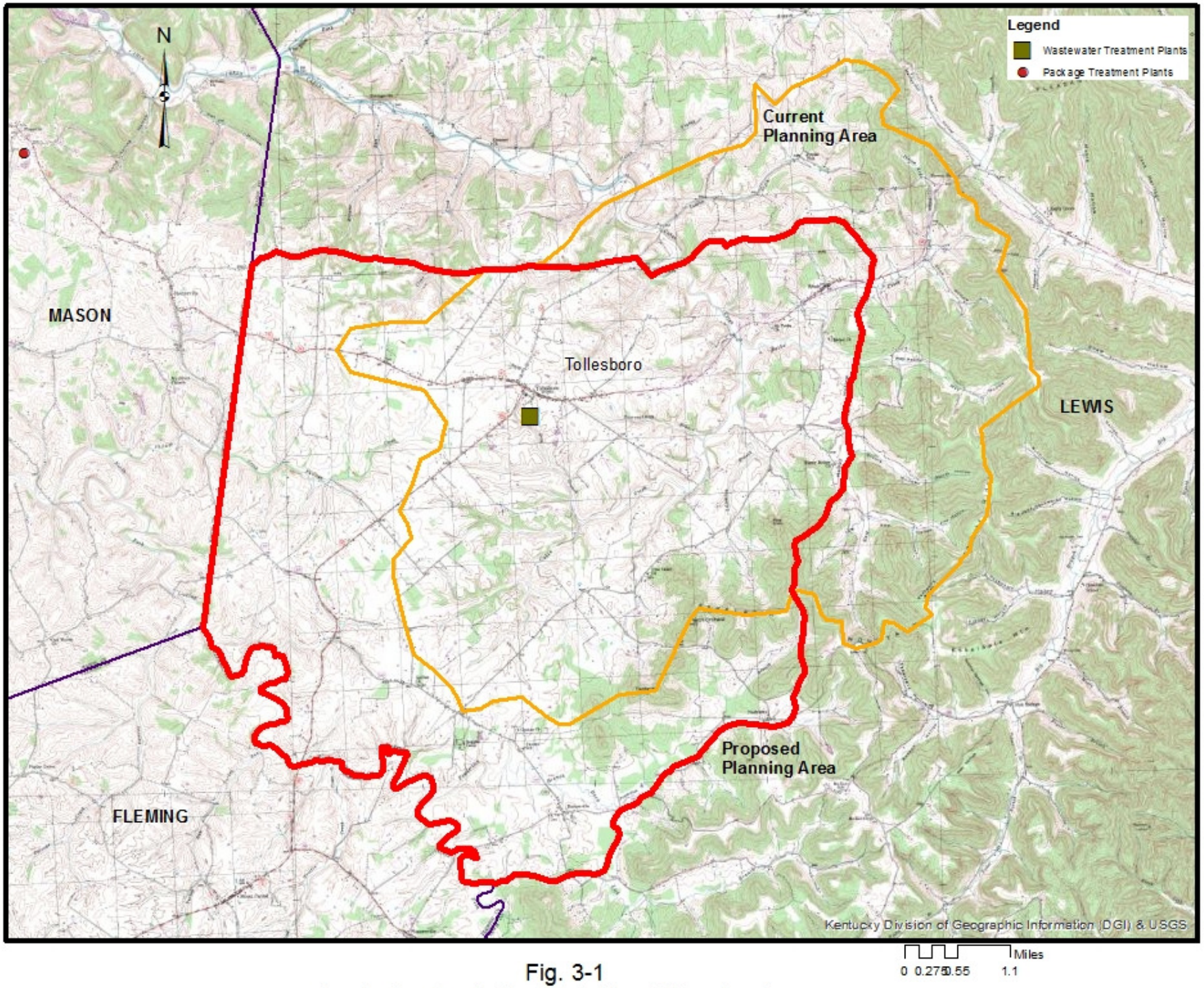


Fig. 3-1
Lewis Co. Sanitation Dist. No. 1 Planning Area

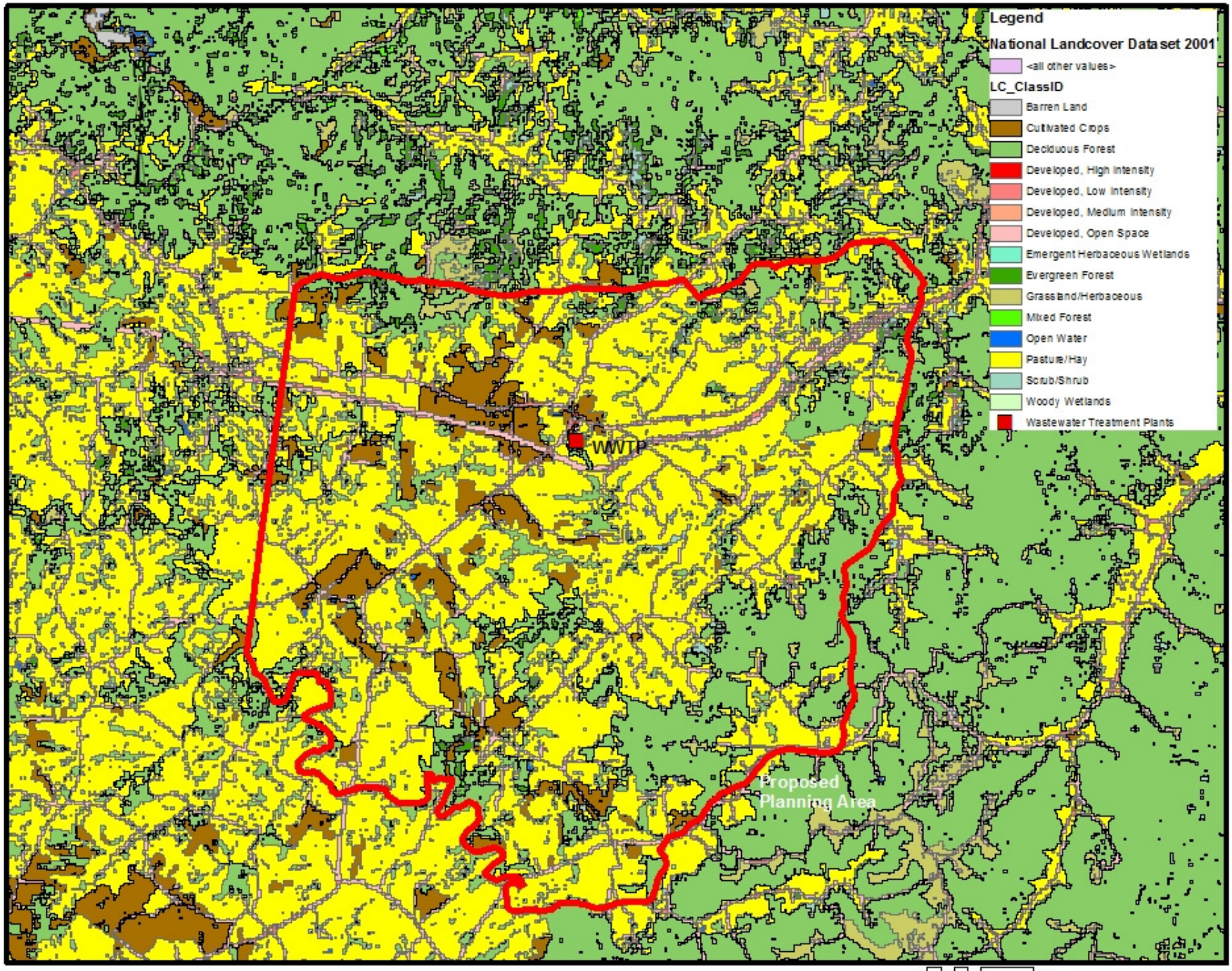


Fig. 3-2
Land Use
Lewis Co. Sanitation Dist. No. 1

SECTION 4
SOCIOECONOMIC CHARACTERISTICS OF THE PLANNING AREA

4.1 INTRODUCTION

The purpose of this chapter of the wastewater facilities plan is to:

- Analyze existing population, economic, and land use trends;
- Establish future growth projections; and
- Project future development patterns for the planning area.

Together, these planning elements form the basis for the prediction of future waste loads.

4.2 HISTORICAL POPULATION DATA

During the five decade period between 1960 and 2010, Lewis County experienced a population growth of approximately 5.8%. Table 4-1 presents the historical population data.

Table 4-1
Population and Percent Growth
Tollesboro and Lewis County, Kentucky

	Tollesboro		Lewis County		Planning Area	
	Pop.	% Change	Pop.	% Change	Pop.	% Change
1960			13115			
1970			12355	-5.8		
1980			14545	17.7		
1990	3,061		13029	-10.42	1,590*	
2000	3,293	7.6	14,092	8.2	1,710*	7.5
2010	3,479	5.7	13,870	-1.6	1,805*	5.6

Source: United States Census Bureau

4.3 POPULATION PROJECTIONS

Based on information obtained from the Kentucky State Data Center, the Lewis County population is projected to decrease in population over the planning period by approximately 3.7% by 2035.

Table 4-2
Population Projections
Tollesboro and Lewis County, Kentucky

	Tollesboro		Lewis County		Planning Area	
	Pop.	**% Change**	**Pop.**	**% Change**	**Pop.**	**% Change**
2010	3,479		13,870		1,805*	
2015	3,488	0.2	13,904	0.2	1810	0.2
2020	3,486	0.0	13,899	0.0	1809	0.0
2025	3,465*	-0.6	13,818	-0.6	1798	-0.6
2030	3,421	-1.3	13,637	-1.3	1,775*	-1.3
2035	3,359*	-1.8	13,385	-1.8	1743	-1.8

4.4 SOCIOECONOMIC CHARACTERISTICS

The most recent employment figures available for Lewis County show the total civil labor force of Lewis County to be 5,508. Of that number, 4,889 are currently employed and 619 (11.2%) are unemployed. About 371 Lewis County residents are engaged in employment related to agriculture; while more than 2,400 are engaged in nonagricultural employment. Only about 1,031 employees are accounted for in the industrial sector. The balance are employed in services and government. In addition, a substantial number of Lewis County residents commute to nearby employment centers such as Maysville, Vanceburg, and Flemingsburg. It is hoped providing reliable infrastructure to the area will encourage growth particularly for the planned industrial area; and thus improve employment statistics.

SECTION 5
EXISTING ENVIRONMENT IN THE PLANNING AREA

5.1 PHYSIOGRAPHY

Lewis County's topography is diverse including parts of four physiographic regions and a section of the Ohio River Valley floodplain. The planning area is within the Outer Bluegrass Physiographic Region in the western part of the survey area. It is characterized by broad, gently sloping ridge tops, moderately sloping and moderately steep side slopes, and moderately wide or wide flood plains. The gently sloping and moderately sloping ridge tops and floodplains are used for row crops or hay, and the moderately sloping and moderately steep side slopes are used as pasture or woodland.

5.2 TOPOGRAPHY

The planning area topography is "rolling" to "hilly" in nature. Tollesboro is located in an "upland" area which drains in several directions. AA Highway and State Route 10 extend from east to west through Tollesboro from Vanceburg in the east to Maysville in the west. State Route 57 runs southwest to northeast, with Flemingsburg in the southwest. Elevations range from a high of 1360 feet along the Fleming-Lewis County line to a low of 485 feet along the Ohio River. The primary housing and commercial areas fall between elevations 760 and 860 feet.

5.3 CLIMATE

The area's climate is temperate, humid, and variable; winters are moderately cold and summers quite warm and humid. Temperatures of 100º F or more and 0º F or less are rare. The area has an average January temperature of about 35º F, an average July temperature of about 76ºF, and an average annual temperature of about 56ºF. There are no regular wet or dry seasons and precipitation is relatively well distributed throughout the year. The late summer and fall months are usually the driest; March is generally considered the month of greatest rainfall. The average annual rainfall is reported as 38 inches.

5.4 GEOLOGY

Lewis County lies along the outside edge of the Outer Bluegrass Physiographic Region. Bedrock throughout the study area lies at a depth of approximately four to five feet. The western area of the County (at Tollesboro) is underlain by limestone and shale formations of the Upper Ordovician age.

5.5 SOILS

Lewis County contains twelve different soil associations, five of which occur within the planning area:

- Newark-Kinnick-Skidmore,
- Fairmount-Faywood,

- Shrouts-Beasley,
- Lawrence-Nicholson-McGary, and
- Covedale-Trappist.

Newark-Kinnick-Skidmore
These soils are very deep, nearly level to gently sloping, and somewhat poorly to well-drained soils having a silty or loamy subsoil, and are located in the flood plains. These soils are usually found in stream valleys, in the western part of the county. The topography can range between 0% and 4% slope. These soils usually have severe management concerns including: flooding, a seasonal high water table, and low available water capacity. However these soils are usually used for cropland, hay land, and pasture.

Fairmount-Faywood
These soils are shallow to moderately deep, steep to very steep, and well-drained having a clayey subsoil, and are located on side slopes. The topography can range between 20% and 55% slope. These soils are usually used for pasture, and woodland.

Shrouts-Beasley
These soils are moderately deep to deep, gently sloping to steep, and well-drained soils having a clayey subsoil, and are located on ridge tops and side slopes. The topography can range between 2% and 30% slope. These soils are usually used for cropland, hay land, pasture, woodland, and rural homes. Residential use concerns include low strength, a moderate shrink-swell potential, depth to bedrock, slow permeability, clayey texture, and slope.

Lawrence-Nicholson-McGary
These soils are very deep, nearly level to moderately sloping, and somewhat poorly drained to moderately drained, have silty to clayey subsoil, and are located on stream terraces, ridge tops, and side slopes. The topography can range between 0% and 12% slope. These soils are usually used for cropland, hay land, pasture, and residential structures. Residential use concerns include low strength, a seasonally high water table, a moderate shrink-swell potential, and a restricted or slow permeability.

Covedale-Trappist
These soils are very deep to moderately deep, gently sloping to very steep, and well-drained soils having a clayey subsoil, and are located on side slopes, foot slopes, and ridge tops. The topography can range between 2% and 55% slope. These soils are usually used for woodland, pasture, and hay.

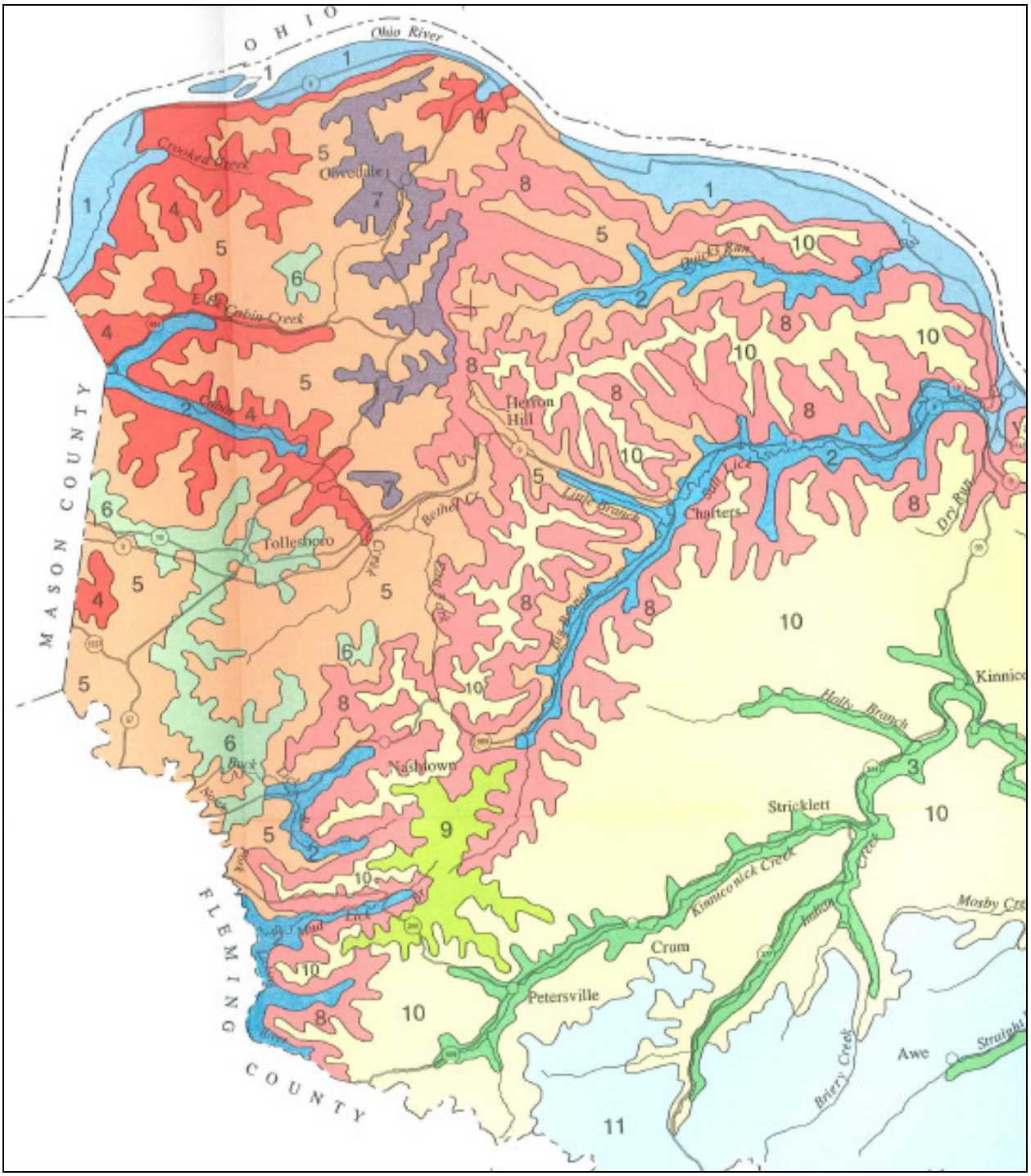


Figure 5-1
Soils Map
Lewis County Sanitation District No. 1

5.6 HYDROLOGY

Hydrological boundaries are defined by surface water drainage areas or basins. The planning area is located in the Licking River Basin Management Unit and within the watersheds of Cabin Creek and the North Fork of the Licking River near the confluences of Grog Branch and Phillips Creek as illustrated in Fig. 5-1. The wastewater treatment facility discharges to Grog Branch, a tributary to Cabin Creek. The Cabin Creek watershed is designated as a Source Water Protection Plan Zone as illustrated in Fig. 5-2.

5.7 WATER QUALITY

The *National Water Quality Inventory Report to Congress* (*305(b) report*) is the primary vehicle for informing Congress and the public about general water quality conditions in the United States. This document characterizes water quality, identifies widespread problems of national significance, and describes various programs implemented to restore and protect waters.

Section 303(d) of the Clean Water Act requires all states, territories, and authorized tribes to develop lists of impaired waters. These are waters that are too polluted or otherwise degraded to meet established water quality standards. Only one section of stream is reported in the *Integrated Report to Congress on the Condition of Water Resources in Kentucky, 2010* as not supporting its designated uses. Cabin Creek which flows from the planning area into Mason County is listed as not supporting its warm water aquatic habitat due to sedimentation and siltation from agriculture and habitat modification. Only about 1.4 miles of that non-supporting section of stream is located within the planning area.
.

5.8 WETLANDS AND FLOODPLAINS

The National Wetlands Inventory provides mapping of known wetland areas, as shown in Fig. 5-1. The proposed project will be constructed as not to impact wetland habitats. The Kentucky Fish and Wildlife Resources Cabinet recommends a 2:1 mitigative ratio for prevention of permanent loss or degradation of wetlands and will be adhered to if wetlands are found. No known wetlands are located within the WWTP site. Similarly, the WWTP site is not located within the floodplain (illustrated in Fig. 5-1). The proposed sewer lines are along and on State Highway right-of-way to avoid wetlands and floodplains.

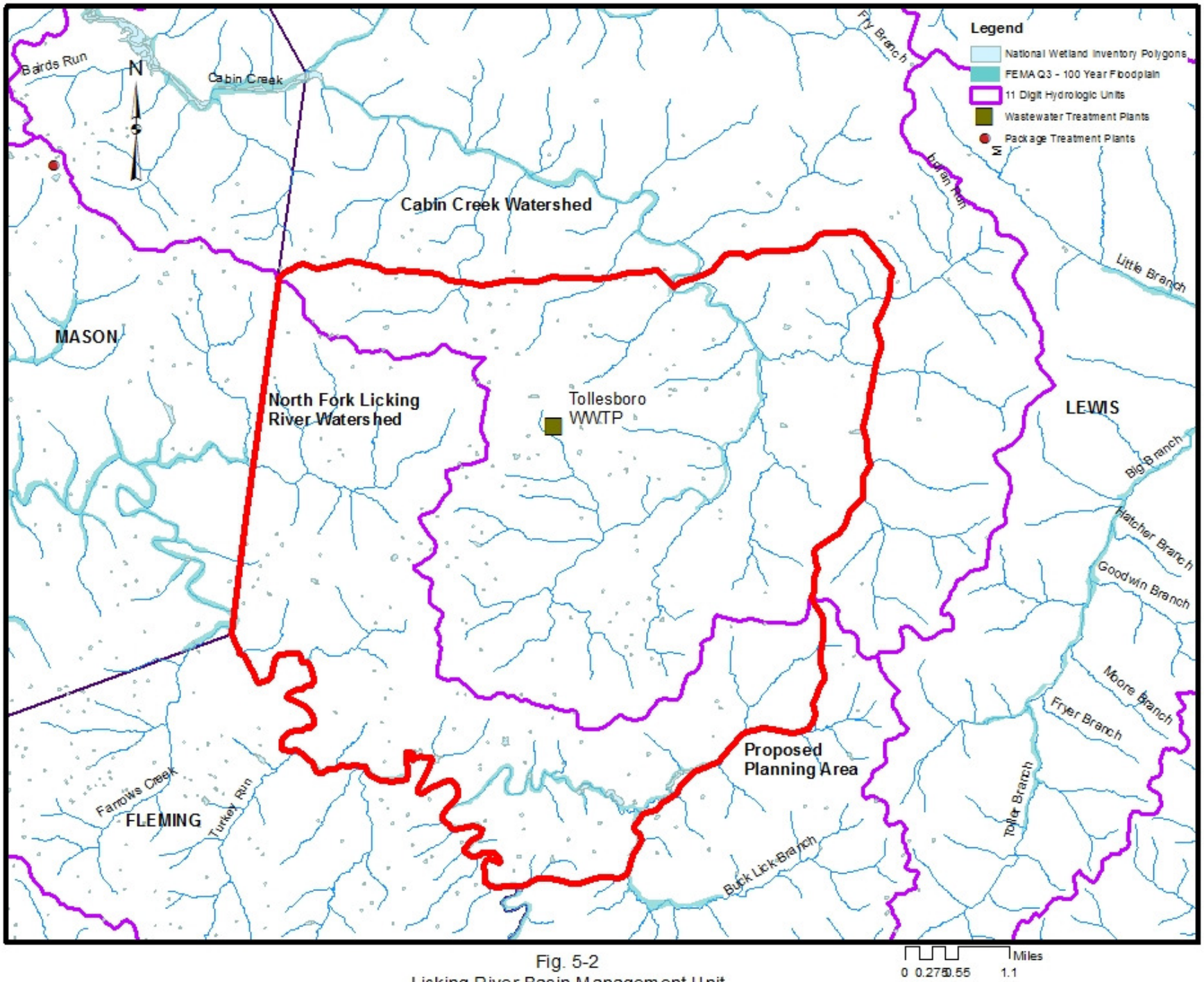


Fig. 5-2
Licking River Basin Management Unit
Lewis Co. Sanitation Dist. No. 1

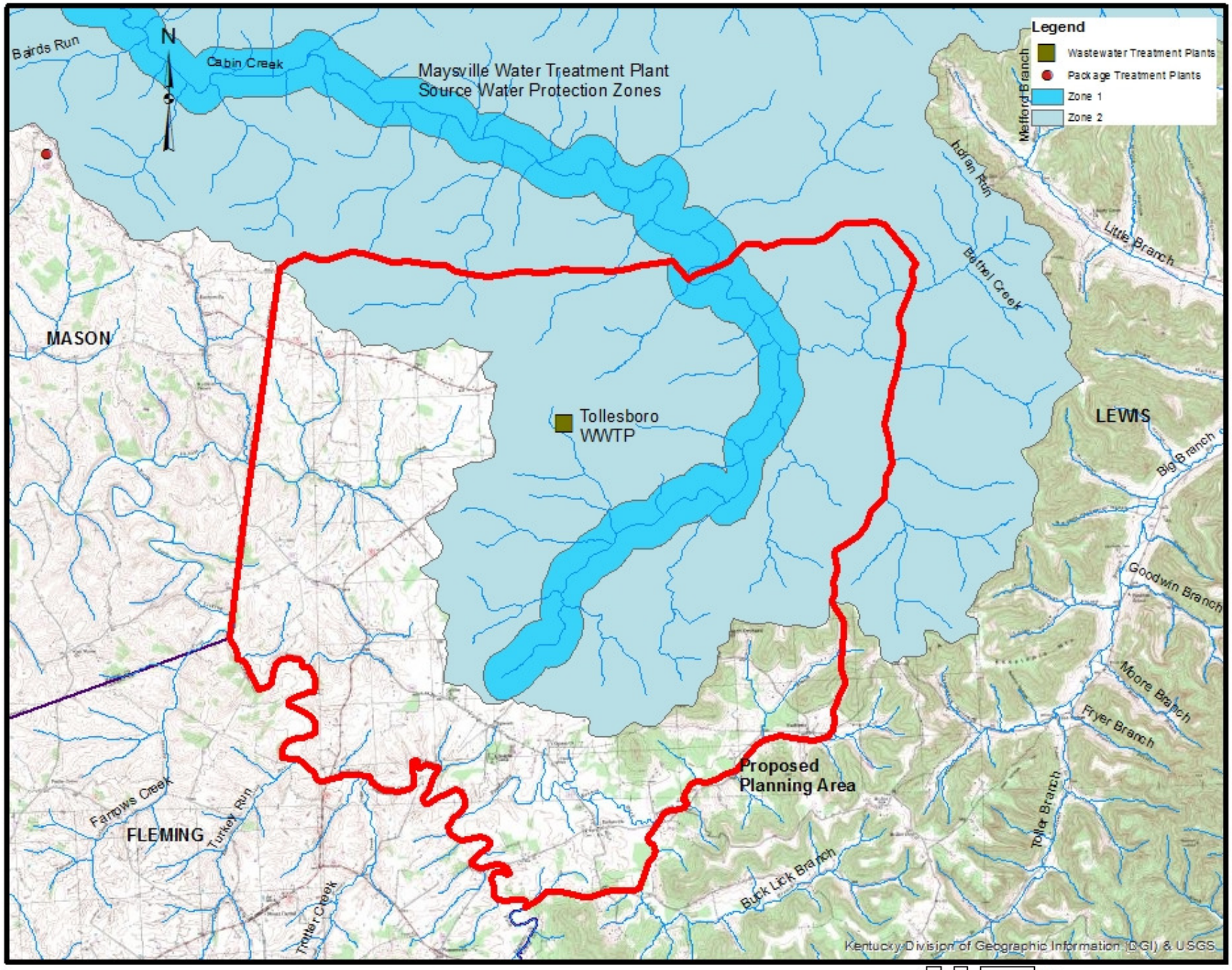


Fig. 5-3
Source Water Area Protection Plan Zones
Lewis Co. Sanitation Dist. No. 1

5.9 AIR QUALITY

The Kentucky Division of Air Quality reports that a portion of the County, primarily along the I-71 corridor, may be a non-attainment area for ozone. This is outside the planning area. Construction operations involved with installation of the wastewater facilities recommended should not significantly impact air quality conditions.

5.10 THREATENED AND ENDANGERED SPECIES

Based on their letter dated January 2, 2013, the United States Department of the Interior, Fish and Wildlife Service (USFWS) determined two protected species are known to occur within the vicinity of the proposed project area: Indiana Bat and Running Buffalo Clover. The Kentucky Department of Fish and Wildlife Resources (KDFWR) has further clarified, by letter dated April 22, 2014, the Indiana Bat is not known to occur within the project area and will not require mitigative measures.

5.11 CULTURAL RESOURCES

The U.S. Department of Interior, National Park Service has designated four locations as archaeological sites within Lewis County as listed in Table 5-2; none of which lie within the designated planning area. Cultural resource studies to identify additional sites may be required when wastewater projects progress towards construction. The Kentucky Heritage Council has reported the proposed projects do not require an archaeological survey.

Table 5-2
National Register of Historic Places
Lewis County, Kentucky

- Cabin Creek Covered Bridge
- Ohio River Lock and Dam No. 31 Grounds and Buildings
- Stone Cellar on Cabin Creek
- Union Monument in Vanceburg

SECTION 6
EXISTING WASTEWATER SYSTEMS

6.1 ON-SITE SYSTEMS

Areas on the west side of S.R. 57 in Tollesboro are still currently unsewered. Presently these homes and businesses are served by on-site septic systems. Due to unsuitable soil conditions and shallow bedrock, the on-site systems do not function well. Many homes were constructed prior to the current plumbing code and lots are often smaller than current regulations would allow. The result is inadequately treated wastewater contaminating surface and groundwater, creating a health hazard for the community. This situation has been confirmed by the Lewis County Health Department by letter dated April 17, 2014 (see appendices).

Additional evidence from county officials and numerous community residents confirms a number of problems with waste disposal in the community. Frequent symptoms include marshy yards, strong odors, wastewater running into yards and ditches, inability to flush toilets during rainy weather, inability to utilize washing machines without backup or failure to drain, and need for frequent pumping of septic tanks (as often as twice a year). Community practices resulting from these conditions include draining of washing machines directly into drainage ditches to bypass septic systems, night time discharge on holding tanks into drainage ditches, and discharge of septic or holding tanks into abandoned wells to bypass dysfunctional leachfields or lack thereof.

6.2 EXISTING FACILITIES

Lewis Co. SD1 currently serves the majority of the Tollesboro community, approximately 550 customers. There are no package wastewater treatment plants within the Planning Area. The collection system was originally constructed in 2000 and added to in 2005 and 2010. The existing wastewater treatment plant (WWTP) has a design capacity of 0.125 mgd and is currently operating at an average of 0.074 mgd or 64% of its average design hydraulic capacity. It is a lagoon treatment facility constructed in 2000 which has been deemed to be in fairly good physical condition. It has, however, had difficulty meeting effluent limits for Ammonia-nitrogen, as evidenced by Notices of Violation issued by the Kentucky Department for Environmental Protection (DEP).

The average daily influent flow treated by the Lewis County Sanitation District No. 1 plant is approximately 0.081 mgd. The total number of existing customers is 550. These numbers appear in line with daily water usages recorded by the District.

Lewis Co. Sanitation District No. 1

KY0102601

AI2705

Design Flow 0.125 mgd

		Influent Flow		BOD_5			TSS			NH_3-N			Phosphorus	
		Avg. mgd	Max. mgd	Infl. mg/l	Effl. mg/l	% Rem.	Infl. mg/l	Effl. mg/l	% Rem.	Infl. mg/l	Effl. mg/l	% Rem.	Effl. mg/l	Reported Violations
KPDES Limit	Summer				30			30			4		--	
	Winter				30			30			10		--	
Dec-12		0.119	0.209	252	10	96.0	234	8	96.6	20.2	23.5	-16.3	4.0	6
Jan-13		0.108	0.176	256	14	94.5	155	7	95.5	17.6	14.2	19.3	3.2	5
Feb-13		0.101	0.139	366	8	97.8	876	13	98.5	18.2	17.8	2.2	3.2	5
Mar-13		0.112	0.234	460	7	98.5	487	13	97.3		17.8		2.8	6
Apr-13		0.078	0.174	691	7	99.0	938	14	98.5		20.1		3.2	4
May-13		0.069	0.152	311	6	98.1	331	9	97.3	20.0	22.4	-12.0	5.5	8
Jun-13		0.056	0.134	301	14	95.3	314	9	97.1	32.6	18.0	44.8	6.0	6
Jul-13		0.097	0.171	278	7	97.5	300	9	97.0	24.4	5.0	79.5	4.4	4
Aug-13		0.054	0.156	514	8	98.4	763	4	99.5	46.1	2.1	95.4	3.9	4
Sep-13		0.049	0.092	497	4	99.2	456	5	98.9	42.7	4.7	89.0	4.8	4
Oct-13		0.053	0.110	453	4	99.1	402	6	98.5	14.6	7.0	52.1	5.4	4
Nov-13		0.071	0.181	329	4	98.8	261	8	96.9	44.2	31.3	29.2	4.8	4
AVERAGE		0.081		392	8	97.7	460	9	97.6	28.1	15.3	38.3	4.3	
MAXIMUM			0.234	691	14	99.2	938	14	99.5	46.1	31.3	95.4	6.0	

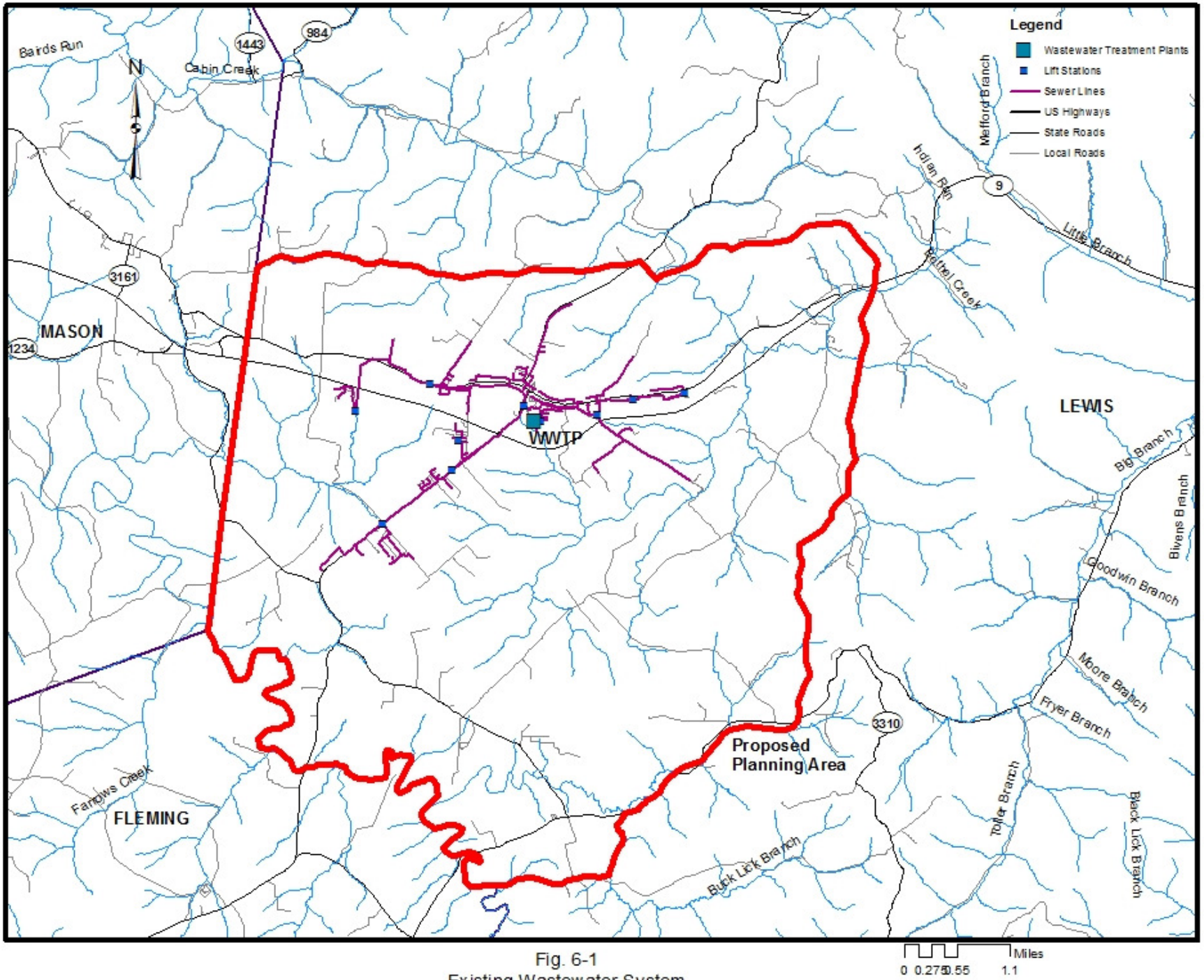


Fig. 6-1
Existing Wastewater System
Lewis Co. Sanitation Dist. No. 1

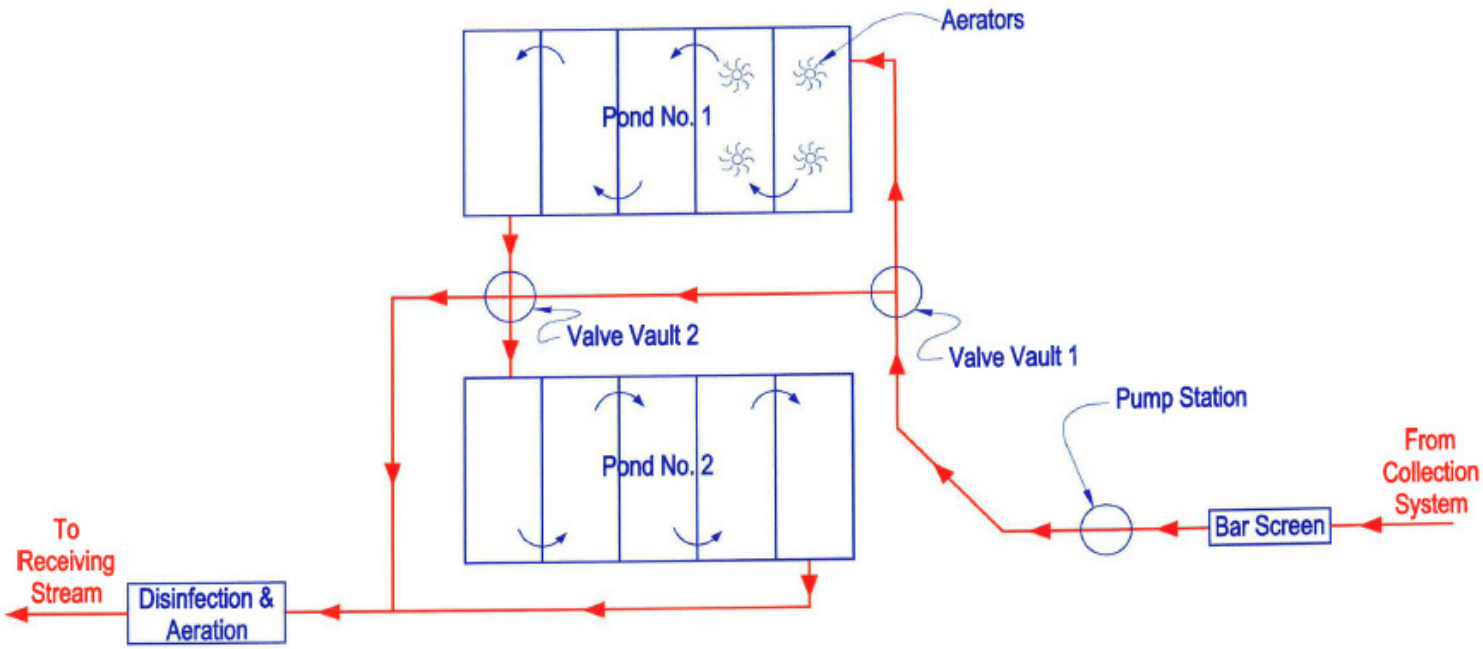


Fig. 6-2
Existing Wastewater Treatment Plant
Lewis County Sanitation District No. 1

SECTION 7
FORECASTS OF FLOWS AND LOADS IN THE PLANNING AREA

7.1 FORECAST OF FLOWS

Based on flow and rainfall data from 2013, dry weather flows were determined. The dry weather flows serve as the basis for determining the presence of infiltration and inflow (I/I) in the system and its severity. An estimate of infiltration is based on the average daily flow received at the plant while inflow is based on the maximum daily flow received. The base flow (dry weather – no I/I) was determined from an extended dry period experienced in August and September of 2013 as 0.043 mgd. Infiltration is estimated at 0.038 mgd with an average overall I/I contribution of 0.240 mgd during rain events.

Lewis Co. SD1 currently has approximately 550 residential customers which is equivalent to approximately 1210 persons based on Census data. The District anticipates serving approximately 620 residential customers by 2016. Future projects in Phase II would add approximately 212 customers to the wastewater system. Refer to Table 7-1 for projected flows.

Table 7-1
Flow Projections
Lewis County Sanitation District 1, Kentucky

		(mgd)
Current		
Avg. Flow (Res./Comm./Ind.)		0.043
Infiltration		0.038
Inflow		0.202
	Average Flow	0.081
	Peak Flow	0.283
Phase I (0-2 Year)		
Avg. Flow (Res./Comm./Ind.)		0.053
Infiltration		0.040
Inflow		0.213
	Average Flow	0.103
	Peak Flow	0.316
Phase II (3-10 Year)		
Avg. Flow (Res./Comm./Ind.)		0.110
Infiltration		0.045
Inflow		0.240
	Average Flow	0.155
	Peak Flow	0.395
Phase III (11-20 Year)		
Avg. Flow (Res./Comm./Ind.)		0.135
Infiltration		0.055
Inflow		0.270
Design:	Average Flow	0.190
	Peak Flow	0.460

7.2 WASTELOAD FORECAST

Any treatment facilities must meet the effluent limits of their KPDES permit. These limits are established through a wasteload allocation determination. The effluent limitations established for discharge into Grog Branch are shown in Table 7-2 (see Wasteload Allocation letter dated March 21, 2014 in the Appendices).

Table 7-2
Wasteload Allocation – Grog Branch Discharge
Lewis County Sanitation District 1, Kentucky

Parameter	Effluent Limitations
$CBOD_5$	25 mg/L
TSS	30 mg/L
Ammonia-Nitrogen: summer	4 mg/L
Ammonia-Nitrogen: winter	10 mg/L
Phosphorus	Monitor
Dissolved Oxygen	7 mg/L
Total Nitrogen	Monitor
Total Residual Chlorine	0.019 mg/L
E. coli	130 col./100 ml
Reliability Classification	Class C

7.3 DESIGN CRITERIA

Table 7-3 presents the preliminary design criteria for the treatment facilities.

Table 7-3
Preliminary Design Criteria
Lewis County Sanitation District 1, Kentucky

Parameter	Influent Design Criteria
$CBOD_5$	350 mg/L
TSS	350 mg/L
Ammonia-Nitrogen	30 mg/L
Phosphorus	6 mg/L

SECTION 8
EVALUATION OF ALTERNATIVES

8.1 DEVELOPMENT AND SCREENING OF ALTERNATIVES

The purpose of this activity is to identify wastewater system alternatives and options and to evaluate those alternatives to determine the most cost effective and environmentally sound option for the community. This chapter describes alternatives and provides a present worth analysis for each alternative presented.

8.2 COLLECTION SYSTEM ALTERNATIVES

Three alternatives were considered for the collection and transportation of the wastewater:

Alternative A: Gravity Sewer System
Alternative B: Low Pressure Sewer System
Alternative C: Mixed Gravity and Pressure System

Alternative A: Gravity Sewer System

A conventional gravity sewer system was evaluated. A number of alternative configurations were reviewed before selecting the lowest cost configuration. The gravity sewers would be eight inches in diameter and 4-10' deep. The force main would be six inches in diameter and 3' deep.

Alternative B: Low Pressure Sewer System

A low pressure sewer system is considered to require less labor to construct over laying gravity sewers; excavation and clean-up are reduced; and the cost of materials is lower overall. The low pressure sewer system alternative would include approximately 5,600 feet of 8" force main, 3,300 feet of 6" force main, 26,000 feet of 3" force main, 16,200 feet of 2" force main, 12,000 feet of 1 1/2" force main, 42,000 feet of 1 1/4" force main, 210 grinder pump stations, and increasing the capacity of three existing lift stations. This alternative is considered the most cost effective.

Alternative C: Combined Gravity Sewer and Pressure Sewer System

This alternative combines elements of the gravity sewer system and the pressure sewer system as described above. Because of the higher costs associated with a gravity sewer system, this alternative would be more expensive to construct than Alternative B.

Table 8-1
Preliminary Project Cost Estimate
SR 10 to Mason County Line Sewers
Lewis County Sanitation District No. 1 Wastewater Facilities Plan

	Alt. A Gravity Sewers	Alt. B Low Pressure	Alt. C Gravity & Press.
Construction	1,153,843	550,000	1,005,600
Contingency (±10%)	116,157	55,000	94,400
Subtotal - Construction Cost	**$1,270,000**	**$605,000**	**$1,100,000**
Project Development Cost			
Engineering	200,000	105,000	160,000
Legal and Administrative	20,000	10,000	15,000
Fund Administration	25,000	15,000	45,000
Miscellaneous	5,000	4,000	10,000
Subtotal - Development Cost	**$250,000**	**$134,000**	**$230,000**
Total Estimated Project Costs	**$1,520,000**	**$739,000**	**$1,330,000**

Collection System Alternative B is considered the most cost effective option based on construction and present worth costs as compared with the other alternatives.

8.3 TREATMENT SYSTEM ALTERNATIVES

Alternatives for treatment are evaluated to determine the most economical/feasible method to treat the quantity of flow and to meet the established effluent limits while conforming to local site and environmental constraints.

The most cost-effective alternative is that system which has the lowest present worth cost without overriding adverse environmental or non-monetary costs. The rate of return for present worth calculations is assumed to be eight percent for a 20 year period.

Salvage value is based on value after 20 years. In determining salvage value, a useful service life was estimated for the various components of the collection and treatment systems. Earthen and concrete structures were assumed to have a 50 year service life, pipe systems were assumed to have a 40 year service life, and mechanical equipment was assumed to have a 20 year service life. For example, concrete structures would retain 60% of initial value after 20 years, and mechanical equipment would have no salvage value after 20 years.

Treatment alternatives considered include:

- No Action
- Lemna Aerated Lagoons Biological Treatment
- Extended Aeration Plant
- Pump to Vanceburg

No Action

This alternative would require the existing wastewater treatment plant to remain in operation with no changes. In this case, the system would:

- Continue to endure nuisances and health hazards,
- Area streams and groundwater would continue to be degraded,
- Treatment systems would continue to be needed for future development,
- Existing equipment at the treatment plant will fail, and
- Collection system lift stations will be at capacity and restrict further expansion.

If this alternative is chosen, the plant would continue to experience violations of its KPDES permit and pollute the receiving stream. Therefore, this alternative is not considered further.

Aerated Lagoon Treatment

This alternative involves dividing the current cells into three cells by using Lemna's reverse Miter Hydraulic baffles to provide a combined total capacity of 0.200 mgd. See Fig. 8-1. This process is an activated sludge process for removing organic pollutants. The aeration basin is large, allowing for long detention times and resistance to shock loading.

Wastewater entering the treatment facility will pass through a screening unit prior to biological treatment in the aerated lagoon. The wastewater then flows to the secondary clarifier to separate the solids from the treated wastewater. The solids are recycled to the lagoon while the effluent flows to a filter for additional fine solids removal. From the filter, flow enters the ultraviolet disinfection basin prior to discharge to Grog Branch.

Extended Aeration Plant

The Extended aeration system is a complete mix activated sludge process using an extended detention time to create a well stabilized effluent. See Fig. 8-2. Extended aeration has some advantages:

- Economical construction
- Provides stable operation, low production of well stabilized biosolids, and high effluent quality.
- Economical treatment process in terms of operation and maintenance cost.
- Ease of expansion capability.
- Integral clarifier design using common walls with the basin, designed to make the most efficient use of the available footprint.

Wastewater entering the treatment facility will pass through a screening unit prior to biological treatment in the aeration basins. The wastewater then flows to the secondary clarifiers to separate the solids from the treated wastewater. The solids are recycled to the aeration basins while the effluent flow enters the ultraviolet disinfection basin prior to discharge to Grog Branch.

Pumping to Vanceburg for Treatment

This alternative would involve decommissioning the existing wastewater treatment plant in Tollesboro and constructing lift stations to pump all wastewater to the existing wastewater treatment plant at Vanceburg. See map included in the appendices. It would also involve expanding the Vanceburg plant to have adequate capacity to treat the wastewater from Lewis Co. SD1.

Treatment System Alternative B is considered the most cost effective system based on construction and present worth costs, as compared with the other alternatives.

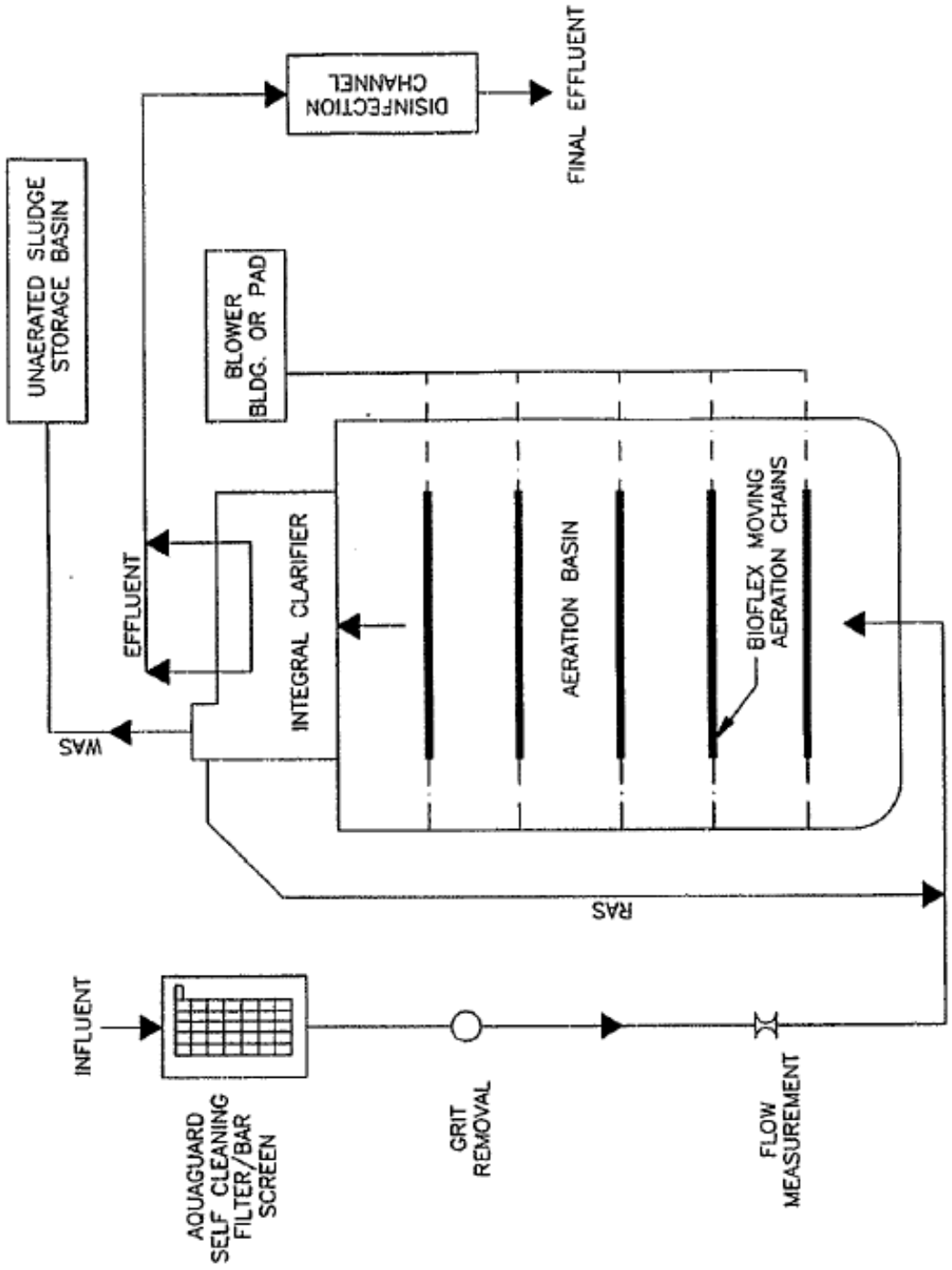


Figure 8-1
Lemna Aeration Treatment Alternative
Lewis County Sanitation District No. 1

Table 8-2
Preliminary Project Cost Estimate
Lemna Aeration Treatment Alternative
Lewis County Sanitation District No. 1 Wastewater Facilities Plan

	Capital Costs	Service Life	Salvage Value	Additional Expenditure at Yr. 10	Additional Expenditure at Yr. 15
0.200 mgd Treatment Unit					
Headworks	94,000	40	47,000	71,000	
Treatment	490,000	40	300,000		
Controls & Electrical	100,000	10	0		
UV Disinfection System	80,000	20	0	10,000	
Refurbish/Cover Drying Beds	30,000	20	0	0	
Installation/Site Work/Yard Piping	259,000	40	27,500	7,500	
Flow Meter	20,000	10	0	7,500	
Subtotal - Construction Cost	**$1,073,000**		**$374,500**	**$96,000**	
Project Development Cost (Engr., Legal, Admin., Land and Right-of-Ways, etc.)	294,000				
Construction Contingencies	107,300				
Total Estimated Project Costs	**$1,474,300**				

O&M Costs	Annual Costs	
Labor		$35,655
Equipment Repair		
Oil and Grease	400	
Parts and Repair	4,600	$12,976
Drying Beds	5,000	
Power - @ $0.07 KWHR		
4-Aerators @ 7.5 HP each (½ operation)	8,635	$11,726
72-UV Lamps @ 1 KW/1000 W	3,091	
Total Estimated Annual O&M Cost		$60,357

Replacement Costs	Additional Expenditures @10 years	Additional Expenditures @ 15 years	Annual Component* of Replacement Cost
Controls and Electric	71,000		
Flow Meter	7,500		
UV Ballasts	10,000		
Subtotal @ 10 years	$88,500		$4,003
Subtotal @ 15 years		$0	
Total Estimated Annual O,M&R Costs			**$64,360**

* Future expenditures at 10 years use a factor of 0.06903 for 7.0 percent to annualize costs $A = F[i/(1+I)^n - 1]$ and at 15 years use a factor of 0.03683 for 7.0 percent to annualize costs.

NOTE: Equipment repair costs are obtained from the I/A Technology Assessment Manual or experience with similar systems. Other costs are calculated as shown. Since the controls and electrical has only a 10 year life, a portion of these facilities will need to be replaced after 10 years. However, some facilities such as conduits, housings, etc. would not have to be replaced and therefore the full costs are not estimated to be required for the future expenditure. This same line of thinking would apply to the flow meter and therefore the full initial cost will not have to be expended after 10 years. Salvage value for those items with less than a 20 year service life is calculated based on the balance remaining of the additional future expenditure at twenty years. Therefore if an item had a 10 year life, it would have to be replaced in 10 years after initial installation then 10 years later at the end of 20 years from initial construction date and thus would still have zero salvage value. Whereas an item with a 15 year life would have to be replaced in 15 years but at the end of 20 years would still have 10 years remaining life and the salvage value of the item's replacement cost would be calculated as shown. (10 yrs/15 yrs = 2/3 = 66.7% Salvage Value of Replacement Costs). Electric power costs are projected based on $0.07/kwh.

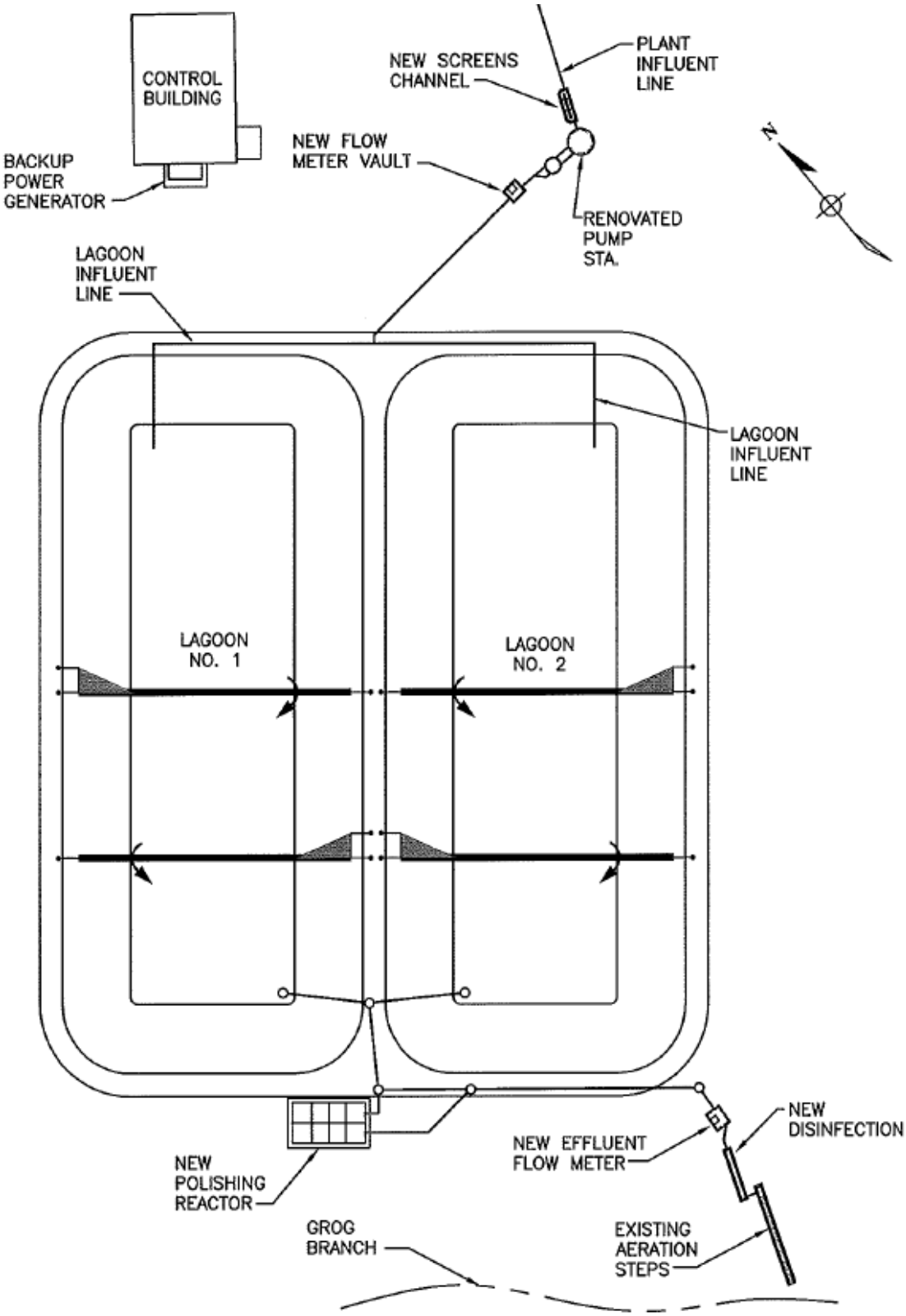


Figure 8-2
Extended Aeration Alternative
Lewis County Sanitation District No. 1

Table 8-3
Preliminary Project Cost Estimate
Extended Aeration Treatment Alternative
Lewis County Sanitation District No. 1 Wastewater Facilities Plan

	Capital Costs	Service Life	Salvage Value	Additional Expenditure at Yr. 10	Additional Expenditure at Yr. 15
Headworks	$108,000	40	$ 54,000		
Sludge Holding Tanks	200,000	40	100,000		
Aeration Tanks	250,000	40	125,000		
Treatment Equipment	815,000	40	462,500		
Controls & Electrical	164,000	10	0	$25,000	$60,000
Sludge Return Pumps	60,000	40	30,000		
UV Disinfection System	80,000	20	0	$10,000	
Refurbish/Cover Drying Beds	30,000	20	0	0	
Site Work and Piping	80,000	40	40,000		
Flow Metering	20,000	40	10,000	7,500	
Subtotal Construction Costs	**$1,807,000**		**$821,500**	**$42,500**	**$60,000**
Project Development Cost (Engr., Legal, Admin., Land and Right-of-Ways, etc.)	418,000				
Contingencies	180,700				
Total Estimated Project Costs	**$2,405,700**				

O&M Costs		Annual Costs
Labor		
One operator @ $27 hr x 20 hrs/wk x 52 wks/yr (half time)		$35,655
Equipment Repair		
Oil and Grease	400	
Parts and Repair	4,600	$12,976
Drying Beds	5,000	
Power - @ $0.07/KWHR		
Aerators 2 @ 20 H.P. = 40 H.P. - 1 Operating = 20 H.P.	15,809	
Sludge Pumps 5 & 10 H.P. - 50% Operation		
72-UV Lamps @ 1 KW/1000 W	3,091	$18,900
Total Estimated Annual O&M Cost		$67,531

Replacement Costs	Additional Expenditures @10 years	Additional Expenditures @ 15 years	Annual Component* of Replacement Cost
Controls and Electric	25,000		
Flow Metering	7,500		
Sludge Return Pumps		40,000	
UV Ballasts	10,000		
Subtotal @ 10 years	42,500		$2,933
Subtotal @ 15 years		40,000	$1,473
Total Estimated Annual O,M&R Costs			**$71,937**

* Future expenditures at 10 years use a factor of 0.06903 for 7.0 percent to annualize costs $A = F[i/(1+I)^n - 1]$ and at 15 years use a factor of 0.03683 for 7.0 percent to annualize costs.

Note: Equipment repair costs are obtained from the I/A Technology Assessment Manual (updated using a July, 1996 ENR construction cost index of 5619.29), or experience with similar systems. Other costs are calculated as shown. The salvage value of the Sludge Return Pumps (SRP) is calculated considering the original SRP's are replaced after 15 years at a cost of $40,000, since some of the original installation equipment can still be used. The replaced SRP's will also have a 15 year service life. Therefore, at the end of 20 years 10 years of useful life would remain, or 2/3, of replacement valve would be the salvage value as shown.

Table 8-4
Preliminary Project Cost Estimate
Pumping to Vanceburg Alternative
Lewis County Sanitation District No. 1 Wastewater Facilities Plan

	Capital Costs	Service Life	Salvage Value	Additional Expenditure at Yr. 10	Additional Expenditure at Yr. 15
Existing WWTP Demolition	10,000				
Four Lift Stations w/Generators	440,000	20			
10" Force Main	800,000	40	400,000		
Expand Vanceburg WWTP	1,000,000	20	500,000		
Miscellaneous Appurtenances	35,000	40	17,500		
Subtotal - Construction Cost	**$2,285,000**		**$917,500**		
Project Development Cost (Engr., Legal, Admin., Land and Right-of-Ways, etc.)	506,000				
Construction Contingencies	228,500				
Total Estimated Project Costs	**$3,019,500**				

O&M Costs	Annual Costs	
Labor		$28,080
Equipment Repair		
Oil and Grease	400	
Parts and Repair	4,600	$5,000
Power - @ $0.07 KWHR		
4-Lift Stations @ 10 HP each (½ operation)		$11,498
Total Estimated Annual O&M Cost		**$34,578**

Replacement Costs	Additional Expenditures @10 years	Additional Expenditures @ 15 years	Annual Component* of Replacement Cost
Controls and Electric	20,000		
Flow Meter	7,500		
Subtotal @ 10 years	27,500		$1,898
Subtotal @ 15 years		0	
Total Estimated Annual O,M&R Costs			**$36,476**

* Future expenditures at 10 years use a factor of 0.06903 for 7.0 percent to annualize costs $A = F[i/(1+I)^n - 1]$ and at 15 years use a factor of 0.03683 for 7.0 percent to annualize costs.
NOTE: Equipment repair costs are obtained from the I/A Technology Assessment Manual or experience with similar systems. Other costs are calculated as shown. Since the controls and electrical has only a 10 year life, a portion of these facilities will need to be replaced after 10 years. However, some facilities such as conduits, housings, etc. would not have to be replaced and therefore the full costs are not estimated to be required for the future expenditure. This same line of thinking would apply to the flow meter and therefore the full initial cost will not have to be expended after 10 years. Salvage value for those items with less than a 20 year service life is calculated based on the balance remaining of the additional future expenditure at twenty years. Therefore if an item had a 10 year life, it would have to be replaced in 10 years after initial installation then 10 years later at the end of 20 years from initial construction date and thus would still have zero salvage value. Whereas an item with a 15 year life would have to be replaced in 15 years but at the end of 20 years would still have 10 years remaining life and the salvage value of the item's replacement cost would be calculated as shown. (10 yrs/15 yrs = 2/3 = 66.7% Salvage Value of Replacement Costs).
Electric power costs are projected based on $0.07/kwh.

8.4 NON-MONETARY EVALUATION

In addition to a cost-effectiveness analysis, the environmental impacts of the alternatives are evaluated. Environmental impact has a number of subcategories which are used to rate each alternative system being considered. The subcategory values are totaled and averaged for each major category. Each alternative is evaluated by each subcategory and a value of one through 10 assigned depending on the relative impact the alternative has on the subcategory. The least impact is normally assigned a value of one and the most adverse impact a value of 10. Table 8-5 summarizes the environmental analysis of the collection system and treatment alternatives.

Table 8-5
Non-monetary Evaluation of Alternatives
Wastewater System
Lewis County Sanitation District No. 1

	Treatment Plant			Collection System			
	Aerated Lagoons	Extended Aeration	Pump to Vanceburg	Gravity Sewers	Pressure Sewers	Gravity & Pressure	No Action
Environmental Impact							
Cultural Resources	1	2	3	3	1	2	3
Floodplains/Wetlands	2	2	1	1	1	1	3
Agricultural Lands	1	2	3	3	1	2	1
Fish	1	1	1	1	1	1	3
Wildlife Habitat	1	2	3	3	1	2	3
Endangered Species	1	2	3	3	1	2	3
Air Quality	1	1	1	3	1	2	4
Water Quality	1	1	1	1	1	1	3
Noise, Odor, Aesthetics	1	1	1	1	1	1	1
Land Use	3	2	1	1	1	1	3
Energy Requirements	1	2	3	1	3	2	0
Recreational Opp.	1	1	1	1	1	1	3
Avg.- Env. Impact	1	2	2	2	1	2	3
Reliability	2	2	2	1	3	2	4
Implementability	1	2	3	3	1	2	4
TOTAL	4	6	7	6	5	6	11

The environmental assessment includes primary and secondary impacts. Other beneficial and adverse impacts are presented in the following sections.

Primary and Secondary Impacts - The implementation of any of the alternatives will have the immediate primary impact of improving the water quality of the receiving streams. Secondary impacts associated with all alternatives will include minor excavation required for construction of the proposed WWTP, pump stations and force mains. The installation of the Lemna cells atop the existing lagoons will have no environmental impact. The excavation for the dual-aerated lagoons alternative will be more significant than the extended aeration alternative. Other secondary impacts include a temporary increase in noise, dust, and siltation in the area during construction.

Beneficial and Adverse Impacts - All of the alternatives will improve the quality of the water in the receiving streams by providing a higher degree of treatment on a consistent basis. All alternatives can be considered equal, based on beneficial impacts.

Adverse impacts include the displacement of vegetation for the construction of the dual-aerated lagoons and extended aeration plants with a temporary increase in odor, dust, noise, and siltation for all alternatives. The adverse impacts of the Lemna dual aerated lagoons is the least severe of the three alternatives.

Long-term and Short-term Impacts - The long-term impacts of all alternatives will be providing adequate treatment to protect the receiving stream. The short-term impacts will be the same as described above in adverse impacts during construction.

Odor and Aesthetics - No significant odors will be produced by any of the alternatives. The treatment facility for the Lemna dual-aerated lagoon alternative will be the most aesthetically pleasing because the facilities are located in-ground and the lagoons will be covered. The extended aeration will not be as aesthetically pleasing because of the tanks being located above ground.

Flexibility - A primary consideration of the flexibility of any alternative is whether future wastewater connections can be made and the ease in which the system can be adjusted to suit the needs of Lewis County SD1 planning area in the future. All three alternatives are reasonably flexible, however, the dual-aerated lagoon plants are the most flexible when comparing their ability to handle peak and shock loads.

Reliability - Reliability must be considered during normal operations and during periods of equipment failure. All three alternatives rely on pumps, blowers, and other mechanical equipment and, therefore, are considered equally reliable.

Energy Use - The Lemna dual-aerated lagoon alternative uses the least amount of energy followed by extended aeration. At the scale of the Lewis County SD1 WWTP (0.20 mgd), the dual-aerated lagoon plant is considered the most efficient.

8.5 SELECTED ALTERNATIVES

Each alternative treatment system is ranked in the areas of cost, reliability and environmental impact. Table 8-5 is a comparison of project costs.

Table 8-6
Comparison of Alternative Project Costs
Lewis County Sanitation District No. 1 Wastewater Facilities Plan

Alternative	Project Cost (+)	O,M&R Annual	O,M&R Costs PW (+)	Salvage Value	Salvage Value PW (-)	Total PW Cost (=)
Lemna Aerated Lagoon	$1,474,300	$64,360	$681,831	$374,500	$96,778	$2,059,353
Extended Aer. Treatment	$2,405,700	$71,937	$762,102	$821,500	$212,291	$2,955,511
Pumping to Vanceburg	$3,019,500	$36,476	$386,427	$917,500	$237,099	$3,168,828

Based on the monetary and non-monetary criteria used to evaluate the alternatives presented in the preceding sections, expansion of the WWTP utilizing the dual-aerated lagoon (Lemna) treatment alternative is selected for the 0 to 2 year plan. It is presented as the most environmentally and economically sound alternative for Lewis Co. SD1 and the planning area.

Construction at the treatment plant will involve improvements on the existing site of the two lagoons sized for the proposed flow. The aerated lagoon will be divided into three cells using Lemna's Reverse Miter Hydraulic Baffle. The first cell will be a 3.9 day complete mix cell followed by a 3.9 day partial mix cell and a 4 day partial mix cell. A separate UV basin will be provided for disinfection.

8.6 SELECTED PLAN

The selected collection system option is Alternative B: Low Pressure Sewer. The Phase I project is composed of approximately 5,600 feet of 8" force main, 3,300 feet of 6" force main, 26,000 feet of 3" force main, 16,200 feet of 2" force main, 12,020 feet of 1 1/2" force main, 42,100 feet of 1 1/4" force main, 210 grinder pump stations, and increase the capacity of three lift/pump stations. This area has many locations where house connections are best served by grinder pumps.

The selected treatment system option is to utilize Aerated Lagoons. The facility will be designed for an average flow of 0.20 mgd in order to meet the anticipated needs through the twenty year planning period. This alternative consists of screening, two aerated lagoons with a polishing reactor and UV disinfection. This alternative provides secondary treatment, nitrogen removal, and sludge volume reduction.

The preliminary estimated project cost for the selected 0 to 2 year collection and treatment alternatives is $2,213,300.

SECTION 9
CROSS CUTTER CORRESPONDENCE

SISLER-MAGGARD ENGINEERING, PLLC
220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KY 40517
(859) 271-2978
Fax (859) 271-5670
Email: sme@sislermaggard.com

December 19, 2012

U.S. Department of the Interior
Fish and Wildlife Service
J.C. Watts Federal Building
330 West Broadway, Suite 265
Frankfort, Ky. 40601

Attn: Mr. Virgil Lee Andrews, Jr., Field Office Supervisor

Re: Wastewater Collection System and Treatment Plant Expansion
Lewis County Sanitation District No. 1
SME # 07066

Dear Sir:

Please find enclosed a system map and pertinent information for the project in order for you to conduct the environmental review. The purpose of the review is to ascertain the impact of the proposed activities.

There is a great need for wastewater collection and treatment systems expansion for the planning area. Raw sewage on the ground and in ditches is commonplace throughout the unsewered areas during all seasons and especially after precipitation events, posing a serious health hazard for the communities involved. The County Health Department has records of many septic tank failures due to the clay content of soils and high rock levels.

The proposed collection system is a Low Pressure Sewer System (LPSS) which is the recommended collection system expansion. The system is composed of approximately 5,600 feet of 8" force main, 18,300 feet of 6" force main, 4,000 feet of 4" force main, 2,050 feet of 3" force main, 18,450 feet of 2" force main, 11,770 feet of 1 1/2" force main, 52,600 feet of 1 1/4" force main, 408 grinder pump stations, and two lift/pump stations. This system has an area where house connections are best served by grinder pumps. The force mains will be 99% located in State and County rights of way.

The proposed treatment system is a Aerated Facultative Lagoons Plant which is the selected treatment system. The new facility is designed for an average flow of 250,000 gpd in order to meet the anticipated needs of the year 2032. This alternative consists of primary treatment to remove trash, two aerated facultative lagoons with a polishing reactor and disinfection. This alternate provides secondary treatment, nitrogen removal and provides sludge volume reduction.

The Division of Water cannot approve a regional facility plan prior to receiving letters from the cross-cutting agencies documenting "no-impact" from the proposed

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project, or stating that their concerns have been adequately addressed. If you find a resource will be adversely impacted as a result of this proposed project, please direct the Sanitation District No. 1 of Lewis County to implement specific measures to avoid, minimize or compensate for the adverse impact. We look forward to your response.

Sincerely,

Joseph F. Sisler, P.E., P.L.S.
President

enclosures: Sewer System Expansion Map
Treatment Plant Renovation Site Plan

cc: Tony Hunt, Manager Lewis Co. Sanitation District No. 1 w/encl.
Ms. Anshu Singh, P.E., Division of Water w/encl.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
330 West Broadway, Suite 265
Frankfort, Kentucky 40601
(502) 695-0468

January 2, 2013

Joseph F. Sisler
Sisler-Maggard Engineering, PLLC
220 East Reynolds Road, Suite A3
Lexington, KY 40517

Re: FWS # 2013-B-0138; Lewis County Sanitation District No. 1; Wastewater Collection System & Treatment Plant Expansion; located in Lewis and Mason Counties, Kentucky

Dear Mr. Sisler:

Thank you for the opportunity to provide comments on the above-referenced project. The U.S. Fish and Wildlife Service (Service) has reviewed this proposed project and offers the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). This is not a concurrence letter. Please read carefully, as further consultation with the Service may be required.

In accordance with the provisions of the Fish and Wildlife Coordination Act, the Service has reviewed the project with regards to the effects the proposed actions may have on wetlands and/or other jurisdictional waters. We recommend that project plans be developed to avoid impacting wetland areas and/or streams, and reserve the right to review any required federal or state permits at the time of public notice issuance. The U.S. Army Corps of Engineers should be contacted to assist you in determining if wetlands or other jurisdictional waters are present or if a permit is required.

In accordance to section 7 of the ESA, the Service must consider the "direct effects", "indirect effects", and "cumulative effects" of the proposed project. "Direct effects" are the effects that occur at the time of construction activities. "Indirect effects" are effects on listed species or critical habitat that are caused by the action and are later in time but are still reasonably certain to occur. "Cumulative effects" are those effects on listed species or critical habitat for future activities and/or projects that are induced by the proposed project subject to consultation and that occur after that project is completed. Please inform us of any future actions and/or projects (*i.e.*; water tanks, water/sewer lines, electrical transmission lines, subdivisions, commercial development) that would reasonably occur as a result of the proposed project so that we may adequately analyze those effects.

In order to assist you in determining if the proposed project has the potential to impact protected species we have searched our records for occurrences of listed species within the vicinity of the

proposed project. Based upon the information provided to us and according to our databases, we believe that the following federally listed species have the potential to occur within the project vicinity. The listed species are:

Group	Species	Common name	Legal* Status
Mammals	*Myotis sodalis*	Indiana bat	E
Plants	*Trifolium stoloniferum*	running buffalo clover	E

** Key to notations: E = Endangered, T = Threatened, C = Candidate, CH = Critical Habitat*

We must advise you that collection records available to the Service may not be all-inclusive. Our database is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitats and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality.

Indiana bat

Summer roost and/or winter habitat for the endangered Indiana bat may exist within the proposed project site. Based on this information, we believe that: (1) forested areas in the vicinity of and on the project area may provide potentially suitable summer roosting and foraging habitat for the Indiana bat; and (2) caves, rockshelters, and abandoned underground mines in the vicinity of and on the project area may provide potentially suitable wintering habitat for the Indiana bat. Our belief that potentially suitable habitat may be present is based on the information provided in your correspondence, the fact that much of the project site and/or surrounding areas contain forested habitats that are within the natural range of this species, and our knowledge of the life history characteristics of the species.

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 5 inches DBH. By definition a "potential Indiana bat roost tree" is a tree that is greater than 5-inches DBH and exhibits one or more of the following characteristics: exfoliating bark, cracks, crevices, dead portions, and cavities.

Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula, where they feed and roost until temperatures drop to a point that forces them into hibernation. This "swarming" period is dependent upon weather conditions and may last from about September 15 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Research has shown that bats exhibiting this "swarming" behavior will range up to five miles from chosen hibernacula during this time. For hibernation, the Indiana bat prefers limestone caves, sandstone rockshelters, and abandoned underground mines with stable temperatures of 39 to 46 degrees F and humidity above 74 percent but below saturation.

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Because we have concerns relating to the Indiana bat on this project and due to the lack of occurrence information available on this species relative to the proposed project area, we would have the following recommendations relative to Indiana bats.

- Based on the presence of numerous caves, rock shelters, and underground mines in Kentucky, we believe that it is reasonable to assume that other caves, rock shelters, and/or abandoned underground mines may occur within the project area, and, if they occur, they could provide winter habitat for Indiana bats. Therefore, we would recommend that the project proponent survey the project area for caves, rock shelters, and underground mines, identify any such habitats that may exist on-site, and avoid impacts to those sites pending an analysis of their suitability as Indiana bat habitat by this office.

- The project proponent can modify the proposed project to eliminate or reduce impacts to potential Indiana bat roost trees. If this is not practicable, we would recommend that the project proponent only remove potential roost trees within the project area between October 15 and March 31 in order to avoid directly impacting summer roosting Indiana bats. Removing trees during the specified "unoccupied" period avoids direct effects to Indiana bats. The resulting indirect and cumulative effects to Indiana bats from habitat removal are often determined to be insignificant or discountable. However, sometimes additional measures, including, but not limited to, further analysis, surveys, and/or mitigation, are necessary to address indirect and cumulative effects to ensure that the project is in full compliance with the ESA relative to the Indiana bat.

If your project schedule requires the clearing of potential Indiana bat roosting trees during the period of April 1 to October 14, you have two primary options for addressing impacts to Indiana bats:

- The project proponent can survey the project site to determine the presence or absence of Indiana bats within the project area in an effort to determine if potential effects are likely. A qualified biologist who holds the appropriate collection permits for the Indiana bat must undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If any Indiana bats are identified, we would request written notification of such occurrence(s) and further coordination and consultation.

- The project proponent can enter into a Conservation Memorandum of Agreement (MOA) with the Service to gain flexibility in project timing with regard to the removal of suitable Indiana bat habitat. In exchange for this flexibility, the Cooperator provides recovery-focused conservation benefits to the Indiana bat through the implementation of minimization and mitigation measures as set forth in the Indiana Bat Mitigation Guidance for the Commonwealth of Kentucky. For additional information about this option, please notify our office.

Running buffalo clover

Running buffalo clover may occur within the proposed project site. This species requires periodic, moderate disturbances to reduce competition and maintain open or semi-open habitat conditions. Disturbed areas such as old pastures, moderately grazed fields, road rights-of-way, and power line rights-of-way that are mechanically maintained are known to provide suitable habitat for these species. Additionally, running buffalo clover is known to occur in habitats ranging from stream banks and low mesic (moderately moist) forests to lawns and cemeteries. If the proposed project(s) require alteration of habitat that coincides with the habitat required for this species, an on-site inspection or survey of the area must be conducted to determine if the listed species is present or occurs seasonally. Surveys should be done by qualified personnel and be conducted during the appropriate time of day and/or year to ensure confidence in survey results. Please notify this office with the results of any surveys and an analysis of the "effects of the action," as defined by 50 CFR 402.02 on any listed species including consideration of direct, indirect, and cumulative effects.

A survey for running buffalo clover would not be necessary if sufficient site-specific information was available that showed that: (1) there is no potentially suitable habitat within the project area or its vicinity or (2) the species would not be present within the project area or its vicinity due to site-specific factors.

Thank you again for your request. Your concern for the protection of endangered and threatened species is greatly appreciated. If you have any questions regarding the information that we have provided, please contact Jessi Miller at (502) 695-0468 extension 104.

Sincerely,

Virgil Lee Andrews, Jr.
Field Supervisor

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SISLER-MAGGARD ENGINEERING, PLLC
220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KY 40517
(859) 271-2978
Fax (859) 271-5670
Email: sme@sislermaggard.com

December 19, 2012

Kentucky Department of Fish and Wildlife Resources
#1 Sportsman Lane
Frankfort, Ky. 40601

Attn: Mr. Mike Hardin, Assistant Director of Fisheries

Re: Wastewater Collection System and Treatment Plant Expansion
Lewis County Sanitation District No. 1
SME # 07066

Dear Sir:

Please find enclosed a system map and pertinent information for the project in order for you to conduct the environmental review. The purpose of the review is to ascertain the impact of the proposed activities.

There is a great need for wastewater collection and treatment systems expansion for the planning area. Raw sewage on the ground and in ditches is commonplace throughout the unsewered areas during all seasons and especially after precipitation events, posing a serious health hazard for the communities involved. The County Health Department has records of many septic tank failures due to the clay content of soils and high rock levels.

The proposed collection system is a Low Pressure Sewer System (LPSS) which is the recommended collection system expansion. The system is composed of approximately 5,600 feet of 8" force main, 18,300 feet of 6" force main, 4,000 feet of 4" force main, 2,050 feet of 3" force main, 18,450 feet of 2" force main, 11,770 feet of 1 1/2" force main, 52,600 feet of 1 1/4" force main, 408 grinder pump stations, and two lift/pump stations. This system has an area where house connections are best served by grinder pumps. The force mains will be 99% located in State and County rights of way.

The proposed treatment system is a Aerated Facultative Lagoons Plant which is the selected treatment system. The new facility is designed for an average flow of 250,000 gpd in order to meet the anticipated needs of the year 2032. This alternative consists of primary treatment to remove trash, two aerated facultative lagoons with a polishing reactor and disinfection. This alternate provides secondary treatment, nitrogen removal and provides sludge volume reduction.

The Division of Water cannot approve a regional facility plan prior to receiving letters from the cross-cutting agencies documenting "no-impact" from the proposed project, or stating that their concerns have been adequately addressed. If you find a resource will be adversely impacted as a result of this proposed project, please direct

the Sanitation District No. 1 of Lewis County to implement specific measures to avoid, minimize or compensate for the adverse impact. We look forward to your response.

Sincerely,

Joseph F. Sisler, P.E., P.L.S.
President

enclosures: Sewer System Expansion Map
Treatment Plant Renovation Site Plan

cc: Tony Hunt, Manager Lewis Co. Sanitation District No. 1.w/encl.
Ms. Anshu Singh, P.E., Division of Water w/encl.

TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY DEPARTMENT OF FISH & WILDLIFE RESOURCES

Steven L. Beshear
Governor

#1 Sportsman's Lane
Frankfort, Kentucky 40601
Phone (502) 564-3400
1-800-858-1549
Fax (502) 564-0506
fw.ky.gov

Bob Stewart
Secretary

22 April 2014

Brennen Mayhew, E.I.T.
Sisler Maggard Engineering, PLLC
220 E. Reynolds Road, Ste. A3
Lexington, KY 40517

RE: Lewis County Sanitation Expansion and Pressure Line

Dear Mr. Mayhew:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for additional information pertaining to the subject project. KDFWR sent a comment letter regarding this project on 20 December 2012. After further review of the project details and scope, the KDFWR does not anticipate impacts to the Trout-perch *(Percopsis omiscomaycus)*, Savannah Sparrow *(Passerculus sandwichensis)*, or the Northern Leopard Frog *(Rana pipiens)* due to the location and nature of this project. This project does not occur within known areas of Indiana bat *(Myotis sodalis)* habitat. The National Wetlands Inventory indicates the presence of wetlands within the project area. If impacts to these areas are anticipated, please contact the U.S. Army Corps of Engineers and Kentucky Division of Water to determine if permits may be needed. Please be aware that our database system is a dynamic one that only represents our current knowledge of various species distributions.

Erosion control measures, as mentioned in prior correspondence, should be developed and implemented prior to construction to reduce siltation into waterways located within the project area. I hope this information is helpful to you, and if you have questions or require additional information, please call me at (502) 564-7109 extension 4453.

Sincerely,

Dan Stoelb
Wildlife Biologist

Cc: Environmental Section File

7066

KENTUCKY DEPARTMENT OF FISH & WILDLIFE RESOURCES
TOURISM, ARTS, AND HERITAGE CABINET

Steven L. Beshear
Governor

#1 Sportsman's Lane
Frankfort, Kentucky 40601
Phone (502) 564-3400
1-800-858-1549
Fax (502) 564-0506
fw.ky.gov

Marcheta Sparrow
Secretary

Dr. Jonathan W. Gassett
Commissioner

20 December 2012

Joseph F. Sisler, P.E., P.L.S.
Sisler-Maggard Engineering, PLLC
220 East Reynolds Road, Suite A3
Lexington, Kentucky 40517

RE: Wastewater Collection System and Treatment Plant Expansion
Lewis County Sanitation District No. 1
SME # 07066

Dear Mr. Sisler:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for information regarding the subject project. The Kentucky Fish and Wildlife Information System indicates no federally - threatened/endangered species are known to occur within close proximity to the project site. The state – listed Savannah Sparrow *(Passerculus sandwichensis)*, Northern Leopard Frog *(Rana pipiens)*, and Trout-Perch *(Percopsis omiscomaycus)* are known to occur near the project site. Please be aware that our database system is a dynamic one that only represents our current knowledge of various species distributions.

It appears that the proposed project has the potential to impact wetland habitats. KDFWR recommends that you look at the appropriate US Department of Interior National Wetland Inventory Map (NWI) and the appropriate county soil surveys to determine where the proposed project may impact wetlands. Additionally, field verification may be needed to determine the extent and quality of wetland habitats within the project area. Any planning should include measures designed to eliminate and/or reduce impacts to wetland habitats. If impacts cannot be avoided, mitigation should be properly designed and proposed to offset the losses. KDFWR will recommend, at a minimum, a 2:1 mitigation ratio for any permanent loss or degradation of wetland habitats.

To minimize indirect impacts to aquatic resources, strict erosion control measures should be developed and implemented prior to any construction to minimize siltation into streams and storm water drainage systems located within the project area. Such erosion control measures may include, but are not limited to silt fences, staked straw bales, brush barriers, sediment basins, and diversion ditches. Erosion control measures will need to be installed prior to construction and should be inspected and repaired regularly as needed.

I hope this information is helpful to you, and if you have questions or require additional information, please call me at (502) 564-7109 extension 4453.

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Sincerely,

Dan Stoelb
Wildlife Biologist

Cc: Environmental Section File

KentuckyUnbridledSpirit.com

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SISLER-MAGGARD ENGINEERING, PLLC
220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KY 40517
(859) 271-2978
Fax (859) 271-5670
Email: sme@sislermaggard.com

December 19, 2012

Kentucky Heritage Council
300 Washington St.
Frankfort, Ky. 40601

Attn: Lindy Casebier, Acting Executive Director/State Historic Preservation Officer

Re: Wastewater Collection System and Treatment Plant Expansion
Lewis County Sanitation District No. 1
SME # 07066

Dear Sir:

Please find enclosed a system map and pertinent information for the project in order for you to conduct the environmental review. The purpose of the review is to ascertain the impact of the proposed activities.

There is a great need for wastewater collection and treatment systems expansion for the planning area. Raw sewage on the ground and in ditches is commonplace throughout the unsewered areas during all seasons and especially after precipitation events, posing a serious health hazard for the communities involved. The County Health Department has records of many septic tank failures due to the clay content of soils and high rock levels.

The proposed collection system is a Low Pressure Sewer System (LPSS) which is the recommended collection system expansion. The system is composed of approximately 5,600 feet of 8" force main, 18,300 feet of 6" force main, 4,000 feet of 4" force main, 2,050 feet of 3" force main, 18,450 feet of 2" force main, 11,770 feet of 1 1/2" force main, 52,600 feet of 1 1/4" force main, 408 grinder pump stations, and two lift/pump stations. This system has an area where house connections are best served by grinder pumps. The force mains will be 99% located in State and County rights of way.

The proposed treatment system is a Aerated Facultative Lagoons Plant which is the selected treatment system. The new facility is designed for an average flow of 250,000 gpd in order to meet the anticipated needs of the year 2032. This alternative consists of primary treatment to remove trash, two aerated facultative lagoons with a polishing reactor and disinfection. This alternate provides secondary treatment, nitrogen removal and provides sludge volume reduction.

The Division of Water cannot approve a regional facility plan prior to receiving letters from the cross-cutting agencies documenting "no-impact" from the proposed project, or stating that their concerns have been adequately addressed. If you find a resource will be adversely impacted as a result of this proposed project, please direct

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the Sanitation District No. 1 of Lewis County to implement specific measures to avoid, minimize or compensate for the adverse impact. We look forward to your response.

Sincerely,

Joseph F. Sisler, P.E., P.L.S.
President

enclosures: Sewer System Expansion Map
Treatment Plant Renovation Site Plan

cc: Tony Hunt, Manager Lewis Co. Sanitation District No. 1 w/encl.
Ms. Anshu Singh, P.E., Division of Water w/encl.

1064

STEVEN L. BESHEAR
GOVERNOR

TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY HERITAGE COUNCIL

MARCHETA SPARROW
SECRETARY

THE STATE HISTORIC PRESERVATION OFFICE
300 WASHINGTON STREET
FRANKFORT, KENTUCKY 40601
PHONE (502) 564-7005
FAX (502) 564-5820
www.heritage.ky.gov

LINDY CASEBIER
ACTING EXECUTIVE DIRECTOR AND
STATE HISTORIC PRESERVATION OFFICER

January 22, 2013

Mr. Joseph F. Sisler
Sisler-Maggard Engineering, PLLC
220 East Reynolds Road, Suite A3
Lexington, KY 40517

Re: Wastewater Collection System and Treatment Plant Expansion Lewis County Sanitation District No. 1

Dear Mr. Sisler:

Thank you for your correspondence on the project listed above. A review of our files indicates that the proposed project area has never been investigated by a professional archaeologist to determine if any properties eligible for listing in the National Register of Historic Places are present. Investigations of projects in similar environmental contexts have resulted in the identification of archaeological sites, some of which have been determined eligible for listing in the National Register. Given the project area's environmental setting in my opinion, it has a high potential for impacting archaeological sites. Therefore, I recommend that all undisturbed portions of the project area be surveyed by a professional archaeologist. A report documenting the results of this investigation must be submitted to the State Historic Preservation Officer for review, comment, and approval. Where a given project area or portions thereof have been disturbed by prior construction (farming is not considered disturbance), the applicant may file documentation (pictures) of that disturbance with the State Historic Preservation Officer and request an opinion concerning the need of an archaeological survey.

Should you have any questions, please contact Philip Mink of my staff at (502)564.7005, ext. 112, or at Philip.Mink@ky.gov.

Sincerely,

Lindy Casebier
Acting Executive Director and
State Historic Preservation Officer

LC:pbm

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SISLER-MAGGARD ENGINEERING, PLLC
220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KY 40517
(859) 271-2978
Fax (859) 271-5670
Email: sme@sislermaggard.com

February 1, 2013

Kentucky Heritage Council
300 Washington St.
Frankfort, Ky. 40601

Attn: Lindy Casebier, Acting Executive Director/State Historic Preservation Officer

Re: Wastewater Collection System and Treatment Plant Expansion
Lewis County Sanitation District No. 1
SME # 07066

Dear Sir:

Please find enclosed a copy of a letter previously published in the "Tollesboro Wastewater Facilities Preliminary Engineering Report" and the "Wastewater Facilities Plan" dated in 1997. The letter stated that the Kentucky Heritage Council and State Historic Preservation Officer has made comments that the lines do not require an archaeological survey but the wastewater treatment plant did. Those lines and that treatment plant were built as they were approved. Our new expansion to the existing treatment plant will be built on the same plant site. Our proposed sewage collection system extension will be built on sites which have been disturbed previously by building residences or businesses which have septic tanks with leech fields and on highway right-of-way.

The new pump station no. 11 site at the county line may not have been previously disturbed, but it does not seem likely that it would qualify as archaeological site.

The new pump station no. 12 site at Plumville is located on a formerly commercial property of warehouse type building that has been demolished in the last three years. Subsequently there can be no doubt that this property (pump station no. 12 site) has been previously disturbed.

There is a great need for wastewater collection and treatment systems expansion for the planning area. Raw sewage on the ground and in ditches is commonplace throughout the unsewered areas during all seasons and especially after precipitation events, posing a serious health hazard for the communities involved. The County Health Department has records of many septic tank failures due to the clay content of soils and high rock levels.

The proposed collection system is a Low Pressure Sewer System (LPSS) which is the recommended collection system expansion. The system is composed of approximately 5,600 feet of 8" force main, 18,300 feet of 6" force main, 4,000 feet of 4" force main, 2,050 feet of 3" force main, 18,450 feet of 2" force main, 11,770 feet of 1 1/2"

force main, 52,600 feet of 1 1/4" force main, 408 grinder pump stations, and two lift/pump stations. This system has an area where house connections are best served by grinder pumps. The force mains will be 99% located in State and County rights of way.

The proposed treatment system is a Aerated Facultative Lagoons Plant which is the selected treatment system. The new facility is designed for an average flow of 250,000 gpd in order to meet the anticipated needs of the year 2032. This alternative consists of primary treatment to remove trash, two aerated facultative lagoons with a polishing reactor and disinfection. This alternate provides secondary treatment, nitrogen removal and provides sludge volume reduction.

The Division of Water cannot approve a regional facility plan prior to receiving letters from the cross-cutting agencies documenting "no-impact" from the proposed project, or stating that their concerns have been adequately addressed. If you find a resource will be adversely impacted as a result of this proposed project, please direct the Sanitation District No. 1 of Lewis County to implement specific measures to avoid, minimize or compensate for the adverse impact. We look forward to your response.

Sincerely,

Joseph F. Sisler, P.E., P.L.S.
President

enclosures: Letter from Kentucky Heritage Council and State Historic Preservation Officer

cc: Tony Hunt, Manager Lewis Co. Sanitation District No. 1 w/encl.
Ms. Anshu Singh, P.E., Division of Water w/encl.

The Kentucky Heritage Council and State Historic Preservation Officer has made the following comments pertaining to State Application Identifier KY930929-1228:

The proposed sewer lines do not require an archaeological survey, however, the wastewater treatment plant must be surveyed by a professional archaeologist to determine if sites eligible for listing in the National Register for Historic Places will be affected by the undertaking. Where a given project area or portions thereof have been disturbed by prior construction, the applicant may file documentation of that disturbance with the State Historic Preservation Officer and may request an opinion concerning the need of an archaeological survey. The State Historic Preservation Officer must review and approve the survey report.

The applicant must ensure compliance with the Advisory Council on Historic Preservation's Rules and Regulations for the Protection of Historic and Cultural Properties (36 CFR, Part 800) pursuant to the National Historic Preservation Act of 1966, The National Environmental Policy Act of 1969, and Executive Order 11593.

The Kentucky Natural Resources and Environmental Protection Cabinet, Division of Waste Management has made the following comment pertaining to State Application Identifier Number (SAI#) KY930929-1228.

Construction debris must be disposed in accordance with lewis County's approved solid waste management plan. Also sludge disposal must be in accordance with DWM regulations.

SISLER-MAGGARD ENGINEERING, PLLC
220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KY 40517
(859) 271-2978
Fax (859) 271-5670
Email: sme@sislermaggard.com

December 19, 2012

Louisville District, US Army Corps of Engineers
PO Box 59
Louisville, Ky. 40201-0059

Attn: Leann Devine - CELRL-OP-FS-Room 752

Re: Wastewater Collection System and Treatment Plant Expansion
Lewis County Sanitation District No. 1
SME # 07066

Dear Ms. Devine:

Please find enclosed a system map and pertinent information for the project in order for you to conduct the environmental review. The purpose of the review is to ascertain the impact of the proposed activities.

There is a great need for wastewater collection and treatment systems expansion for the planning area. Raw sewage on the ground and in ditches is commonplace throughout the unsewered areas during all seasons and especially after precipitation events, posing a serious health hazard for the communities involved. The County Health Department has records of many septic tank failures due to the clay content of soils and high rock levels.

The proposed collection system is a Low Pressure Sewer System (LPSS) which is the recommended collection system expansion. The system is composed of approximately 5,600 feet of 8" force main, 18,300 feet of 6" force main, 4,000 feet of 4" force main, 2,050 feet of 3" force main, 18,450 feet of 2" force main, 11,770 feet of 1 1/2" force main, 52,600 feet of 1 1/4" force main, 408 grinder pump stations, and two lift/pump stations. This system has an area where house connections are best served by grinder pumps. The force mains will be 99% located in State and County rights of way.

The proposed treatment system is a Aerated Facultative Lagoons Plant which is the selected treatment system. The new facility is designed for an average flow of 250,000 gpd in order to meet the anticipated needs of the year 2032. This alternative consists of primary treatment to remove trash, two aerated facultative lagoons with a polishing reactor and disinfection. This alternate provides secondary treatment, nitrogen removal and provides sludge volume reduction.

The Division of Water cannot approve a regional facility plan prior to receiving letters from the cross-cutting agencies documenting "no-impact" from the proposed project, or stating that their concerns have been adequately addressed. If you find a resource will be adversely impacted as a result of this proposed project, please direct

the Sanitation District No. 1 of Lewis County to implement specific measures to avoid, minimize or compensate for the adverse impact. We look forward to your response.

Sincerely,

Joseph F. Sisler, P.E., P.L.S.
President

enclosures: Sewer System Expansion Map
Treatment Plant Renovation Site Plan

cc: Tony Hunt, Manager Lewis Co. Sanitation District No. 1 w/encl.
Ms. Anshu Singh, P.E., Division of Water w/encl.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE KY 40201-0059

http://www.lrl.usace.army.mil/

7444

January 17, 2013

RECEIVED
JAN 18 2013
SISLER-MAGGARD ENGINEERING

Operations Division
Regulatory Branch (South)
ID No. LRL-2013-56-mlc

Mr. Joseph Sislser
Sisler-Maggard Engineering, PLLC
220 East Reynolds Road, Suite A3
Lexington, Kentucky 40517

Dear Mr. Sisler:

This is in regard to your letter dated December 19, 2012 requesting an environmental review on behalf of Lewis County Sanitation District No. 1 for the Waste Water Collection System and Treatment Plant Expansion in Lewis County, Kentucky. The project would include the construction of a collection system, force main, grinder pump station, two lift/pump stations and a treatment system. I'm sending correspondence electronically to expedite the process.

The U.S. Army Corps of Engineers (USACE) exercises regulatory authority under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act, 1972 (33 USC 1344) for certain activities in "waters of the United States (U.S.)." "Waters of the U.S.," include hydrologically connected lakes, rivers and stream channels exhibiting an Ordinary High Water Mark (OHWM), wetlands, sloughs, wet meadows and wetlands adjacent to "waters of the U.S." The OHWM elevation is the line on the bank established by the changing water surface and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; and other indications as determined upon inspection of the area.

Section 404 requires that a Department of the Army (DA) permit be obtained for the placement or discharge of dredged and/or fill material into "waters of the U.S," including wetlands, prior to conducting the work. Section 10 requires that a DA permit be obtained for any work that occurs in, under, or over a navigable water. These waters include all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce.

Based on the information provided by you, "waters of the U.S." appear to be located within the project area. These waters may include unnamed tributaries (UT) to Thoroughman Branch, UT to Phillipe Creek, UT to Cabin Creek, UT to Grog Branch and any other stream channels (perennial, intermittent, ephemeral) and/or hydrologically connected lakes exhibiting an OHWM and any adjacent wetlands within

45

the proposed project area. A jurisdictional determination must be completed if a proposed project would impact any "waters of the U.S.," including wetlands.

Our comments on this project are limited to only those effects which may fall within our area of jurisdiction and thus does not obviate the need to obtain other permits from State or local agencies.

Based on the information provided by you, a DA permit MAY BE REQUIRED for this activity. If the project would necessitate the discharge of dredged or fill material into any "waters of the U.S.," including jurisdictional wetlands, then you should further contact this office and submit a full DA permit application, including a delineation of all "waters of the U.S." for review by this office. A completed DA permit application would include additional details regarding the project's design, scope, photos, construction methods, purpose and the locations (coordinates) of all "waters of the U.S." Please allow sufficient time in your preconstruction schedule for the processing of a DA permit application. Copies of DA permit application forms can be obtained by writing to the above address ATTN: CELRL-OP-FS or online at http://www.lrl.usace.army.mil/.

If you have any questions, please contact this office by writing to the above address, ATTN: CELRL-OP-FS, or by calling me at 502-315-6709. All correspondence pertaining to this matter should refer to our ID No. LRL-2013-56-mlc.

Sincerely,

Meagan Chapman
Project Manager
Regulatory Branch

46
43

SISLER-MAGGARD ENGINEERING, PLLC
220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KY 40517
(859) 271-2978
Fax (859) 271-5670
Email: sme@sislermaggard.com

January 21, 2013

Louisville District, US Army Corps of Engineers
PO Box 59
Louisville, Ky. 40201-0059

Attn: Meagan Chapman - CELRL-OP-FS

Re: ID No. LRL-2013-56-mlc
Wastewater Collection System and Treatment Plant Expansion
Lewis County Sanitation District No. 1
SME # 07066

Dear Ms. Chapman:

This is in regard to your letter dated January 17, 2013 stating the possible requirement for a DA permit for our project. There will be no discharge of dredged or fill material into any "waters of the U.S.", including jurisdictional wetlands. Therefore we will not submit a "full DA permit application".

Sincerely,

Joseph F. Sisler, P.E., P.L.S.
President

cc: Tony Hunt, Manager Lewis Co. Sanitation District No.
Ms. Anshu Singh, P.E., Division of Water

SISLER-MAGGARD ENGINEERING, PLLC
220 EAST REYNOLDS ROAD, SUITE A3
LEXINGTON, KY 40517
(859) 271-2978
Fax (859) 271-5670
Email: sme@sislermaggard.com

December 19, 2012

Natural Resources and Conservation Service
Vanceburg Service Center
38 W KY 8 Suite C
Vanceburg, Ky. 41179-5471

Attn: Mr. Richard Bowling

Re: Wastewater Collection System and Treatment Plant Expansion
Lewis County Sanitation District No. 1
SME # 07066

Dear Sir:

Please find enclosed a system map and pertinent information for the project in order for you to conduct the environmental review. The purpose of the review is to ascertain the impact of the proposed activities.

There is a great need for wastewater collection and treatment systems expansion for the planning area. Raw sewage on the ground and in ditches is commonplace throughout the unsewered areas during all seasons and especially after precipitation events, posing a serious health hazard for the communities involved. The County Health Department has records of many septic tank failures due to the clay content of soils and high rock levels.

The proposed collection system is a Low Pressure Sewer System (LPSS) which is the recommended collection system expansion. The system is composed of approximately 5,600 feet of 8" force main, 18,300 feet of 6" force main, 4,000 feet of 4" force main, 2,050 feet of 3" force main, 18,450 feet of 2" force main, 11,770 feet of 1 1/2" force main, 52,600 feet of 1 1/4" force main, 408 grinder pump stations, and two lift/pump stations. This system has an area where house connections are best served by grinder pumps. The force mains will be 99% located in State and County rights of way.

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The Division of Water cannot approve a regional facility plan prior to receiving letters from the cross-cutting agencies documenting "no-impact" from the proposed project, or stating that their concerns have been adequately addressed. If you find a

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45

resource will be adversely impacted as a result of this proposed project, please direct the Sanitation District No. 1 of Lewis County to implement specific measures to avoid, minimize or compensate for the adverse impact. We look forward to your response.

Sincerely,

Joseph F. Sisler, P.E., P.L.S.
President

enclosures: Sewer System Expansion Map
Treatment Plant Renovation Site Plan

cc: Tony Hunt, Manager Lewis Co. Sanitation District No. 1 w/encl.
Ms. Anshu Singh, P.E., Division of Water w/encl.

United States Department of Agriculture

NRCS Natural Resources Conservation Service

1925 Old Main Street
Suite 2
Maysville, KY. 41056
Ph: 606-759-5570

1/7/2013

To: Joseph F. Sisler PE, PLS
Sisler-Maggard Engineering, PLLC
220 East Reynolds Road, Suite A3
Lexington, KY 40517

RECEIVED
JAN, ~~APR 9~~ 9 2013
SISLER-MAGGARD ENGINEERING

Re: Wastewater Collection System and Treatment Plant Expansion
Lewis County Sanitation District No. 1
SME # 07066

Mr. Sisler,

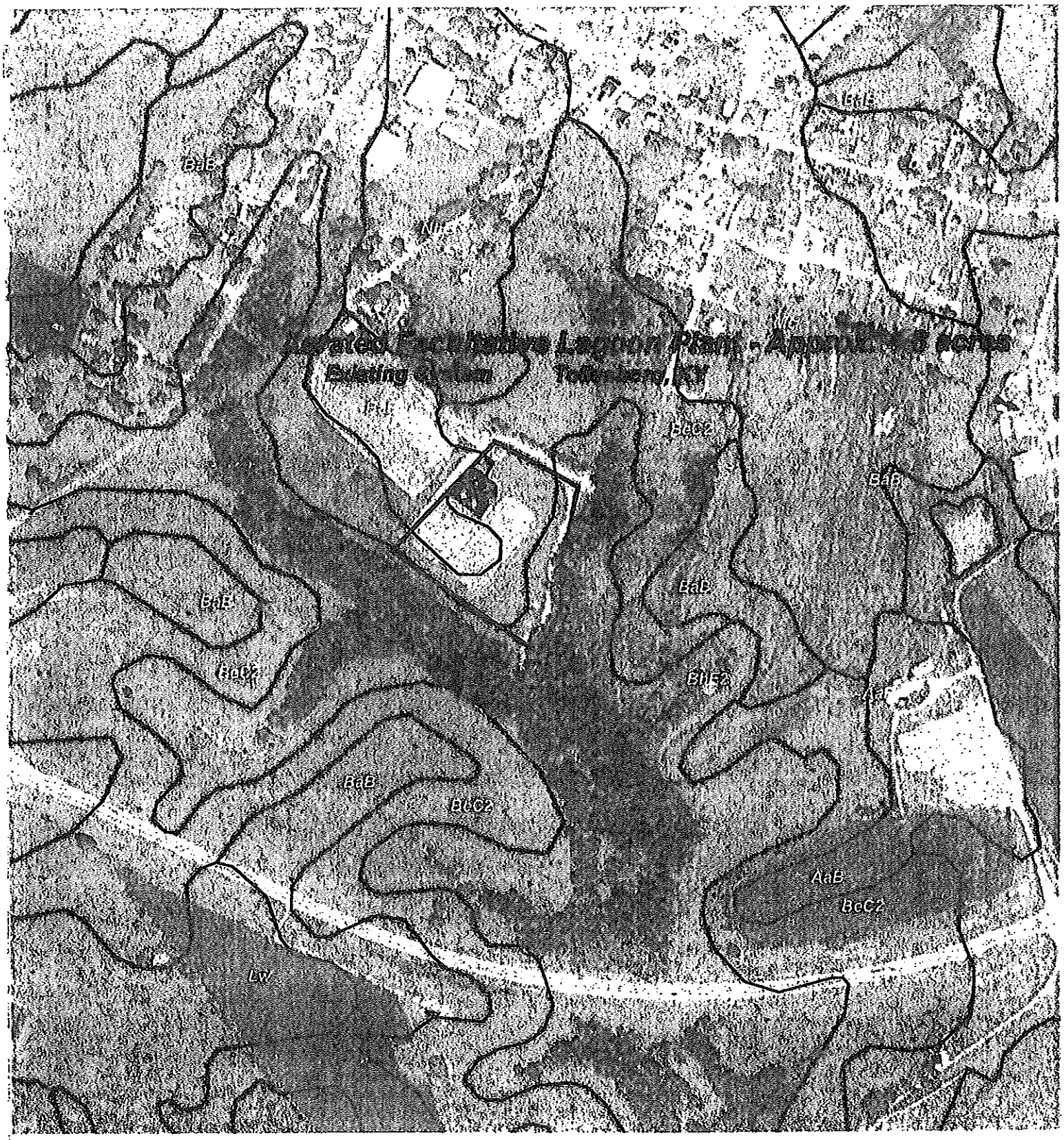
According to the information in your request or NRCS 2012 photography, (attached for treatment plant), all areas of construction, lines, and pumps will be placed on previously disturbed areas or on existing rights of way along State and County roads, all of which are already considered as prior converted lands and not affecting farmlands. "This determination does not apply to any lands beyond the boundary of the existing right-of-ways, streets, or areas not within the incorporated city limits or not already previously disturbed and therefore designated as *Prior Converted*." This office does not have any additional concerns at this time.

If needed, additional information on the soils of Lewis County, KY is available on-line through USDA's Web Soil Survey.

If this office may be of additional assistance, please do not hesitate to contact my office in Maysville Ky. or contact the NRCS District Conservationist at 606-796-3831.

Steve Jacobs
Resource Soil Scientist, NRCS, Maysville, KY.

cc: Richard Bowling, NRCS District Conservationist, Vanceburg, KY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SECTION 10
EVALUATION OF RECOMMENDED REGIONAL FACILITY PLAN

10.1 ENVIRONMENTAL IMPACTS

This section identifies areas of potential major environmental impact, such as woods, steep slopes, historic and archaeological sites, habitats of fish and wildlife, and agricultural land. There are no known negative environmental impacts from the proposed project alternatives.

Water Resources

Siltation in the project area could have adverse effects on the water quality. Measures will be taken to prevent this from occurring. Accidental spills and disposal of potentially harmful materials during construction will be removed and disposed of properly based on State/Federal standards.

Wetlands

The proposed project is not anticipated to impact wetland habitats. The Kentucky Fish and Wildlife Resources Cabinet recommends a 2:1 mitigative ratio for permanent loss or degradation of wetlands and will be adhered to if wetlands are encountered. The WWTP site is situated outside of floodplains and wetlands. The proposed sewer lines are along and on State Highway right-of-way and thus do not infringe on any wetlands.

Land and Soils

There is a significant amount of agricultural activity in and around the planning area. Approximately 80 percent of the total land area in the county is used as farmland. Minimal disruption of agricultural activities is expected since the project is primarily in the residential and commercial areas, and no lines are planned adjacent to active farms. It has been determined no prime farmlands will be adversely affected by the project and conversion of agricultural lands to development is not anticipated based on current projections. The proposed construction project is expected to last about one year. Soil disturbance will be kept to a minimal period of time, and daily cleanup and seeding will help prevent erosion.

Cultural Resources and Historic Properties

The Kentucky Heritage Council and State Historic Preservation Officer have stated the proposed sewer lines do not require an archaeological survey. Therefore, mitigation will not be required.

Threatened and Endangered Species

The United States Department of the Interior, Fish and Wildlife Service noted two endangered/threatened species possible in the proposed project area: Indiana Bat and Running Buffalo Clover. The Kentucky Department of Fish and Wildlife Resources further clarified Indiana Bat does not occur in the area; therefore, no mitigative measures are necessary. The area will be surveyed for the presence of Running Buffalo Clover and mitigative measures will include avoiding the location as necessary.

Air Quality

Due to the construction activities associated with the proposed project, actions will be taken to control dust, debris piles, and to re-establish disturbed areas by seeding.

10.2 INSTITUTIONAL STRUCTURE

Implementation Capability

Lewis County SD1 has the legal and financial capacity to implement the selected plan. Further, the District has the capability and has agreed to borrow the non-grant share of the project costs with Rural Development.

Management

The District will maintain and operate the sewer system. The system will be under the direct supervision of a licensed operator. Billing and collection services will be provided by Western Lewis-Rectorville Water and Gas District. Bookkeeping and audit services will be provided by Lewis County SD1.

Operating and Maintenance Costs

It is the intention of Lewis County SD1 this project be self-sustaining financially and user rates will provide the revenue necessary to operate this system.

Manpower Requirements of Proposed Selected Plan

One full time, licensed operator is employed by the District. All other labor services are performed by contract.

Sewer Use Ordinance

The District has developed a sewer use ordinance; adopted in May 14, 1998. The ordinance requires mandatory connection to the sewer system when sewers are made available. The Sewer Use Ordinance is included in the Appendices.

10.3 FUNDING PLAN

User Rates

The current user rate for 4,000 gallons per month is $38.65. After Phase I which includes WWTP upgrade and extension of collection system along S.R. 10 to the Mason County line, a 4,000 gallon per month bill is estimated to be $43.20 to pay for debt service and operation and maintenance.

Existing Rate Schedule		Proposed Rate Schedule	
$17.05	Min. 1,000 gallons	$18.00	5.57% increase
$7.20	Per 1,000 gallons	$ 8.40	16.70% increase

Per Western Lewis - Rectorville Water & Gas District, the average Lewis Co. SD1 residential customer uses approximately 3100 - 3200 gallons per month. Current operating expenses reported in the 2013 Audit were $146,940. Adding expenses for the proposed projects ($15,000) results in projected operating expenses of $162,000. This results in an additional revenue requirement of approximately $1000 per month for operating expenses.

The debt service requirements for a $766,000 loan from USDA Rural Development (40 yr, 2.625%, 10% coverage) would results in an annual requirement of $34,300. Lewis Co. SD1 recently retired a USDA Rural Development loan which had an annual debt payment of $20,000. Applying this amount to the needed debt requirement results in an additional debt service need of $14,300.

Taking both cases into account:

Operating Expenses	$1000/mo.	/610 customers	=	$1.64/mo./customer
Debt Service	$1200/mo.	/610 customers	=	$1.97/mo./customer
	Total Additional New Revenue Required		=	$3.61/mo./customer

Based on the information presented, the proposed rate schedule should be adequate to operate the system after the proposed projects are completed.

Table 10-1
Project Budget - Phase I
Lewis County Sanitation District No. 1

Estimated Construction Costs	
WWTP Expansion (Cont. 6)	$1,073,000
S.R. 10 to Mason Co. Line Sewers, Pp. Sta., etc. (Cont. 7)	550,000
Construction Contingency (10%)	162,300
Subtotal – Phase I Construction	$1,785,300
Project Fees	
Engineering Fees	
Basic	$157,000
Resident Inspection	118,000
Additional (easements, permits, geotechnical, etc.)	42,000
Legal and Administrative	35,000
BTADD Administrative Fees	40,000
Miscellaneous Items	36,000
Subtotal – Phase I Project Fees	$428,000
Total Project Costs – Phase I	**$2,213,300**

Table 10-2 Project Budget - Phase II Lewis County Sanitation District No. 1	
Estimated Construction Costs	
Burtonville (Cont. 8)	$1,478,800
Construction Contingency (10%)	147,900
Subtotal – Phase I Construction	$1,626,700
Project Fees	
Engineering Fees	
Basic	$112,000
Resident Inspection	86,000
Additional (easements, permits, geotechnical, etc.)	34,000
Legal and Administrative	23,000
BTADD Administrative Fees	24,000
Miscellaneous Items	5,000
Subtotal – Phase II Project Fees	$284,000
Total Project Costs – Phase II	**$1,910,700**

Table 10-3 Proposed Project Funding – Phase I Lewis County Sanitation District No. 1	
USDA Rural Development Loan	$ 766,000
USDA Rural Development Grant	350,000
Appalachian Regional Commission Grant	250,000
Community Development Block Grant	750,000
Local tap fees (*24@$500)	12,000
District	85,300
Total Funding	$2,213,300

Potential Customers = +/- 62, 60% LMI x 62 = 38 LMI Customers, therefore, 24 customers x $500 = $12,000.

Phase II is expected to follow a similar funding scenario.

10.4 IMPLEMENTATION PROCEDURES AND SCHEDULES

The following implementation schedule has been proposed:

Activity	Anticipated Completion Date
Approved Regional Facilities Plan	July 2014
Design Reviews and Approvals	August 2014
Conditional Loan Commitment	December 2014
Construction Bidding	January 2015
Construction Complete	October 2015
Construction Closeout	November 2015

SECTION 11
DOCUMENTATION OF PUBLIC PARTICIPATION

SECTION 12
REGIONAL FACILITY PLAN COMPLETENESS CHECKLISTS AND FORMS

Requirements: Two (2) hard copies, one certified by a professional engineer licensed in Kentucky and one (1) non-certified digital copy of the regional facility plan and the planning area shapefile on a Compact Disc (CD) shall be submitted to the Cabinet. This completeness checklist should be completed and submitted with each regional facility plan.

Regional Planning Agency Name: **Sanitation District No. 1 of Lewis Co.**
Date: **March 2014**

		PAGE #
SECTION 1		
REGIONAL FACILITY PLAN SUMMARY- This section shall provide a brief summary of the information provided in the facility plan, including the following:		
1.	Purpose of the plan and major problems evaluated in the plan.	1-1
2.	Recommended alternative chosen to remediate or correct the problems and/or serve the area of need identified in the plan. Also, include any institutional arrangements necessary to implement the recommended alternative(s).	1-2
3.	Estimated cost of implementing the proposed plan (including user fees) and the proposed funding method to be used.	1-3
4.	Planning agency commitments necessary to implement the plan.	1-4
5.	Schedule of implementation for projects.	1-4
SECTION 2		
STATEMENT OF PURPOSE AND NEED- This section shall contain a brief description of the purpose and need for a submitting the facility plan.		2-1
SECTION 3		
PHYSICAL CHARACTERISTICS OF THE PLANNING AREA- This section shall delineate the planning area boundaries and describe key topographic, geographic and pertinent natural or man-made features of the area. Digital or electronic submission of the planning area boundary shapefile in a standard GIS format shall also be included. This section shall also include the following maps:		3-1
1.	One (1) up-to-date map, suitable for photocopying, indicate the planning area boundary, service area boundary, watershed boundaries, county lines, populated places, cities and/or towns and project areas or proposed planning period phases.	3-2
2.	One (1) up-to-date map, suitable for photocopying, include locations of wastewater treatment facilities (including package treatment plants), discharge location(s), collection lines (gravity, force main, interceptors), pump stations, public drinking water intake points and groundwater supply areas [Source Water Area Protection Plans (SWAPP) and/or Wellhead Protection Areas (WHPA)].	3-2
3.	One (1) seven and one-half (7 ½) minute USGS topographic map including the location of wetlands, delineation of the 100-year floodplain, surface water(s), and topography.	3-2
4.	If available, a local planning and zoning land use map.	3-3
SECTION 4		
SOCIOECONOMIC CHARACTERISTICS OF THE PLANNING AREA- The following characteristics of the planning area shall be discussed:		
1.	Historical, current, and projected population in the planning area including wastewater contributions from industrial and commercial sources.	4-1
2.	Current and projected population in the existing service area and unsewered parts of the planning area	4-2
3.	Economic or social benefit to the affected community	4-2

SECTION 5		
EXISTING ENVIRONMENT IN THE PLANNING AREA- Describe existing physical, biological, cultural, and other resource features within the planning area with an emphasis on those that may be impacted by the proposed plan or projects, including the following:		
1.	Physical features such as surface and groundwater quality, water sources and supply, wetlands, lakes, streams, air pollution, floodplains, soils, geology, and topography	5-1
2.	Biological: Identify plant and animal communities in the planning area with an emphasis upon endangered and threatened species likely to be impacted	5-5
3.	Cultural: Describe archaeological and historical resources that may be affected by the proposed project	5-5
4.	Other Resource Features such as national and state parks, recreational areas, USDA Designated Important Farmland, and any other applicable environmentally sensitive areas	N/A
SECTION 6		
EXISTING WASTEWATER SYSTEM- This section shall be prepared by a Professional Engineer licensed in Kentucky. A description of the existing facilities within the planning area shall include the following:		
1.	On-site systems in the planning area	6-1
2.	Physical condition of the existing wastewater treatment plant(s) including the type, age, design capacity, process units, peak and average wastewater flows, current discharge permit limits, schematic layout of treatment plant. Include a narrative description of the capacity of the treatment plant to meet reliability and redundancy requirements as outlined in regulation 401 KAR 5:005, Section 13.	6-1
3.	Existing collection and conveyance system and its condition	6-1
4.	Existing biosolids disposal method	N/A
5.	Existing operation, maintenance and compliance issues	6-1
SECTION 7		
FORECASTS OF FLOWS AND WASTE LOADS IN THE PLANNING AREA- This section shall be prepared by a professional engineer licensed in Kentucky and shall include:		
1.	Current and projected commercial, industrial and residential growth for the proposed planning period	7-1
2.	A copy of the waste load allocation (WLA) issued by the DOW for new or expanded treatment plant projects	7-2
SECTION 8		
EVALUATION OF ALTERNATIVES- This section shall be prepared by a professional engineer licensed in Kentucky and include an assessment of alternatives to determine the appropriate facilities that will meet the wastewater needs of the planning area and provide benefits that are cost-effective and environmentally sound. The section shall include:		
1.	No-action alternative	8-1
2.	Optimization of existing facilities	to
3.	Regionalization	
4.	Other alternatives	8-4
5.	Detailed cost analysis along with 20 year present worth analysis for each alternative	8-5
6.	Recommended alternative	8-9

SECTION 9		
CROSS-CUTTER CORRESPONDENCE AND MITIGATION- Each facility plan shall include cross-cutter correspondences to and from each agency related to the following four environmental and cultural concerns:		
1.	Threatened and Endangered Species: The U.S. Fish and Wildlife Service- Kentucky Ecological Services Field Station and the Kentucky Department of Fish and Wildlife Resources	9-
2.	Historical Resources: The Kentucky Heritage Council State Historic Preservation Office	9-
3.	Aquatic Resources: The US. Army Corps of Engineers (Louisville, Nashville, or Huntington Districts).	9-
4.	Agricultural Resources: The local office of the Natural Resources Conservation Service (NRCS) or USDA Service Center	9-
SECTION 10		
EVAULATION OF RECOMMENDED REGIONAL FACILITY PLAN- This section of the facility plan shall summarize the critical components of the recommended plan.		
1.	Environmental impacts	10-1
2.	Institutional structure	10-2
3.	Funding plan	10-2
4.	Current and projected residential user charge rate based on 4,000 gallon usage per month	10-2
5.	Implementation schedule	10-5
SECTION 11		
DOCUMENTATION OF PUBLIC PARTICIPATION- The section shall include a copy of the newspaper advertisement/proof of publication, attendance sheet, and public comments.		11-

Unit Process Design Criteria Form

Unit Process	Number of Units[1]	Flow per Unit (MGD)	Design Criteria[2]
Influent Pumping	2	0.88	401 KAR 5:005 and Ten States Standards
Screening	2	0.88	401 KAR 5:005 and Ten States Standards
Grit Removal	N/A	N/A	
Primary Clarification	N/A	N/A	
Biological Process	2	0.88	401 KAR 5:005 and Ten States Standards
Chemical Phosphorus Removal	N/A	N/A	
Final Clarification	2	0.88	401 KAR 5:005 and Ten States Standards
Disinfection	2	1.12	401 KAR 5:005 and Ten States Standards
RAS/WAS Pumping	N/A	N/A	
Sludge Treatment	N/A	N/A	
Sludge Dewatering	N/A	N/A	

1*The number of units shall be in accordance with the reliability/redundancy checklist
2*The design criteria shall be in accordance with 401 KAR 5:005 including Ten States Standards

Note: This is a suggested format only. The process listed here will not fit every project and will therefore need to be revised accordingly.

Design Flow and Concentration Form

Design Flows and Organic Concentrations	Flows MGD	BOD_5 mg/l	BOD_5 lb/day	SS mg/l	SS lb/day	NH_3-N mg/l	NH_3-N lb/day	TKN mg/l	TKN lb/day	P mg/l	P lb/day
Average Daily											
Domestic Portion	0.25	240	500	240	500	25	52	25	52	8	17
Industrial Portion	0	0	0	0	0	0	0	0	0	0	0
Total	0.25	240	500	240	500	25	52	25	52	8	17
Population Equivalent	2500										
Peak Hourly											
Domestic Portion	0.8775	240	1755	240	1755	25	183	25	183	8	59
Industrial Portion	0	0	0	0	0	0	0	0	0	0	0
Total	0.8775	240	1755	240	1755	25	183	25	183	8	59
Peak Daily	0.8775										
Peak Instantaneous	0.8775										

KPDES

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT

PERMIT NO.: KY0102601

AI NO.: 2705

AUTHORIZATION TO DISCHARGE UNDER THE

KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

Sanitation District #1 of Lewis County
P.O. Box 298
Tollesboro, Kentucky 41189

is authorized to discharge from a facility located at

Sanitation District #1 of Lewis County
338 Cooper Drive
Tollesboro, Lewis County, Kentucky

to receiving waters named

Grog Branch

in accordance with effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit shall become effective on December 1, 2012.

This permit and the authorization to discharge shall expire at midnight, November 30, 2017.

October 31, 2012

Date Signed

Sandra L. Gruzesky, Director
Division of Water

DEPARTMENT FOR ENVIRONMENTAL PROTECTION

Division of Water, 200 Fair Oaks Lane, Frankfort, Kentucky 40601

Printed on Recycled Paper

1. EFFLUENT AND MONITORING REQUIREMENTS

1.1. Monitoring Locations

The following table lists the outfalls authorized by this permit, the latitude and longitude of each and the DOW assigned KPDES outfall number.

MONITORING LOCATIONS				
Number	Type	Latitude	Longitude	Description of Outfall
001	Effluent	38°33'17.3"N	83°34'36.6"W	Treated Domestic Wastewater

1.2. Effluent Limitations and Monitoring Requirements

Beginning on the effective date and lasting through the term of this permit discharges from Outfall 001 shall comply with the effluent limitations.

EFFLUENT LIMITATIONS							MONITORING REQUIREMENTS		
Effluent Characteristic	Loadings (lbs/day)		Concentrations (specify units)				Monitoring		Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Maximum	Location	Frequency	
Flow (Design 0.125 MGD)	Report	Report	N/A	N/A	N/A	N/A	Effluent	Continuous	Recorder
Flow (MGD)	Report	Report	N/A	N/A	N/A	N/A	Influent	Continuous	Recorder
$CBOD_5$	26.1	40.0	N/A	25 mg/l	38 mg/l	N/A	Effluent	1/Week	24-Hr Composite
$CBOD_5$	Report	Report	N/A	Report (mg/l)	Report (mg/l)	N/A	Influent	1/Week	24-Hr Composite
Percent Removal $CBOD_5$	N/A	N/A	N/A	85%	N/A	N/A	N/A	1/Month	Calculated
TSS	31.3	47.0	N/A	30 mg/l	45 mg/l	N/A	Effluent	1/Week	24-Hr Composite
TSS	Report	Report	N/A	Report (mg/l)	Report (mg/l)	N/A	Influent	1/Week	24-Hr Composite
Percent Removal TSS	N/A	N/A	N/A	85%	N/A	N/A	N/A	1/Month	Calculated
Ammonia (as NH_3N) May 1 – October 31	4.2	6.3	N/A	4.0 mg/l	6.0 mg/l	N/A	Effluent	1/Week	24-Hr Composite
Ammonia (as NH_3N) November 1 – April 30	10.4	15.6	N/A	10.0 mg/l	15.0 mg/l	N/A	Effluent	1/Week	24-Hr Composite
E. Coli (colonies/100 ml)	N/A	N/A	N/A	130	240	N/A	Effluent	1/Week	Grab
Dissolved Oxygen	N/A	N/A	7.0 mg/l	N/A	N/A	N/A	Effluent	1/Week	Grab
pH (Standard Units)	N/A	N/A	6.0	N/A	N/A	9.0	Effluent	1/Week	Grab

EFFLUENT LIMITATIONS							MONITORING REQUIREMENTS		
Effluent Characteristic	Loadings (lbs/day)		Concentrations (specify units)				Monitoring		Sample Type
	Monthly Average	Weekly Average	Minimum	Monthly Average	Weekly Average	Maximum	Location	Frequency	
Total Phosphorus	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	Effluent	1/Week	24-Hr Composite
Total Nitrogen (mg/l)	N/A	N/A	N/A	Report (mg/l)	Report (mg/l)	N/A	Effluent	1/Week	24-Hr Composite
Total Nitrogen is the summation of the analytical results for Total Nitrates, Total Nitrites, and Total Kjeldahl Nitrogen									

1.3. Standard Effluent Requirements

The discharges to waters of the Commonwealth shall not produce floating solids, visible foam or a visible sheen on the surface of the receiving waters.

Samples and measurements taken in accordance with the requirements of specified Section 1.2 shall be representative of the volume and nature of the monitored discharge and shall be taken at nearest accessible point after final treatment, but prior to actual discharge to or mixing with the receiving waters or wastestreams from other outfalls.

2. STANDARD CONDITIONS

2.1. Schedule of Compliance

The permittee shall attain compliance with all requirements of this permit on the effective date of this permit unless otherwise stated.

2.2. Standard Conditions for KPDES Permit

2.2.1. Other Permits

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

2.2.2. Sufficiently Sensitive Analytical Methods

Analytical methods utilized to demonstrate compliance with the effluent limitations established in this permit shall be sufficiently sensitive to detect pollutant levels at or below the required effluent limit, i.e. the Method Detection Limit (MDL) shall be at or below the effluent limit. In that instance where an EPA-approved method does not exist that has an MDL at or below the established effluent limitation, the permit shall: (1) use the method specified in the permit; or (2) the EPA-approved method with an MDL that is nearest to the established effluent limit.

2.2.3. Antidegradation

For those discharges subject to the provisions of 401 KAR 10:030, Section 1(3)(b)5, the permittee shall install, operate, and maintain wastewater treatment facilities consistent with those identified below:

Screening, Aerated Lagoon, Stabilization Pond, Ultraviolet Disinfection, Post Aeration

2.2.4. Conditions Applicable to All Permits

The following conditions apply to all KPDES permits.

2.2.4.1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of KRS Chapter 224 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Any person who violates applicable statutes or who fails to perform any duty imposed, or who violates any determination, permit, administrative regulation, or order of the cabinet promulgated pursuant thereto shall be liable for a civil penalty as provided at KRS 224.99.010.

2.2.4.2. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for a new permit.

2.2.4.3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2.2.4.4. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

2.2.4.5. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2.2.4.6. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

2.2.4.7. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

2.2.4.8. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

2.2.4.9. Inspection and Entry

The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
(3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

2.2.4.10. Monitoring and Records

(1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 401 KAR 5:065 Section 2(10) [40 CFR 503]), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

(3) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;
(ii) The individual(s) who performed the sampling or measurements;
(iii) The date(s) analyses were performed;
(iv) The individual(s) who performed the analyses;
(v) The analytical techniques or methods used; and
(vi) The results of such analyses.

(4) Monitoring must be conducted according to test procedures approved under 401 KAR 5:065 Section 2(8) [40 CFR 136] unless another method is required under 401 KAR 5:065 Section 2(9) or (10) [40 CFR subchapters N or O].

(5) KRS 224.99-010 provides that any person who knowingly violates KRS 224.70-110 or other enumerated statutes, or who knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall be guilty of a Class D felony and, upon conviction, shall be punished by a fine of not more than $25,000, or by imprisonment for not more than one (1) year, or both. Each day upon which a violation occurs shall constitute a separate violation.

2.2.4.11. Signatory Requirement

(1) All applications, reports, or information submitted to the Director shall be signed and certified pursuant to 401 KAR 5:060, Section 4 [40 CFR 122.22].

(2) KRS 224.99-010 provides that any person who knowingly provides false information in any document filed or required to be maintained under KRS Chapter 224 shall be guilty of a Class D felony and upon conviction thereof, shall b punished by a fine not to exceed twenty-five thousand dollars ($25,000), or by imprisonment, or by fine and imprisonment, for each separate violation. Each day upon which a violation occurs shall constitute a separate violation

2.2.4.12. Reporting Requirements

2.2.4.12.1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(i) The alteration or addition to a permitted facility may meet one (1) of the criteria for determining whether a facility is a new source in KRS 224.16-050 [40 CFR122.29(b); or

(ii) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under KRS 224.16-050 [40 CFR 122.42(a)(1)].
(iii) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

2.2.4.12.2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

2.2.4.12.3. Transfers

This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under KRS 224 [CWA; see 40 CFR 122.61; in some cases, modification or revocation and reissuance is mandatory].

2.2.4.12.4. Monitoring Reports

Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(i) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.
(ii) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 401 KAR 5:065 Section 2(8) [40 CFR 136], or another method required for an industry-specific waste stream under 401 KAR 5:065 Section 2(9) or (10) [40 CFR subchapters N or O], the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.
(iii) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

2.2.4.12.5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date.

2.2.4.12.6. Twenty-four-Hour Reporting

(i) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(ii) The following shall be included as information which must be reported within twenty-four (24) hours under this paragraph.

(A) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See §122.41(g).
(B) Any upset which exceeds any effluent limitation in the permit.
(C) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within twenty-four (24) hours.

(iii) The Director may waive the written report on a case-by-case basis for reports under paragraph (l)(6)(ii) of this section if the oral report has been received within twenty-four (24) hours.

2.2.4.12.7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under Sections 2.2.4.12.1, 2.2.4.12.4, 2.2.4.12.5, and 2.2.4.12.6, at the time monitoring reports are submitted. The reports shall contain the information listed in Section 2.2.4.12.6.

2.2.4.12.8. Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

2.2.4.13. Bypass

2.2.4.13.1. Definitions

(i) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.
(ii) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

2.2.4.13.2. Bypass Not Exceeding Limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Section 2.2.4.13.1.

2.2.4.13.3. Notice

(i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of the bypass.
(ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section 2.2.4.12.6.

2.2.4.13.4. Prohibition of Bypass

(i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
(C) The permittee submitted notices as required under Section 2.2.4.13.3.

(ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three (3) conditions listed above in Section 2.2.4.13.3.

2.2.4.13.5. Upset

2.2.4.13.5.1. Definition

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2.2.4.13.5.2. Effect of an Upset

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Section 2.2.4.13.5.3 are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2.2.4.13.5.3. Conditions Necessary for a Demonstration of Upset

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(i) An upset occurred and that the permittee can identify the cause(s) of the upset;
(ii) The permitted facility was at the time being properly operated; and
(iii) The permittee submitted notice of the upset as required in Section 2.2.4.12.6; and
(iv) The permittee complied with any remedial measures required under Section 2.2.4.4.

2.2.4.13.5.4. Burden of Proof

In any enforcement preceding the permittee seeking to establish the occurrence of an upset has the burden of proof.

2.3. Reporting of Monitoring Results

Monitoring results obtained during each monitoring period must be reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. The completed DMR for each monitoring period must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the monitoring period for which monitoring results were obtained.

Division of Water

Surface Water Permits Branch
Permits Support Section
200 Fair Oaks Lane
Frankfort, Kentucky 40601
Attention: DMR Coordinator

2.4. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved in accordance with 401 KAR 5:050 through 5:080, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

This permit may be reopened to implement the findings of a reasonable potential analysis performed by the Division of Water.

This permit shall be reopened if Division of Water determines surface waters are aesthetically or otherwise degraded by substances that:

(a) Settle to form objectionable deposits;
(b) Float as debris, scum, oil, or other matter to form a nuisance;
(c) Produce objectionable color, odor, taste, or turbidity;
(d) Injure, are chronically or acutely toxic to or produce adverse physiological or behavioral responses in humans, animals, fish, and other aquatic life;
(e) Produce undesirable aquatic life or result in the dominance of nuisance species; or
(f) Cause fish flesh tainting.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

3. SPECIAL CONDITIONS

3.1. Pretreatment Program

At the present time neither the current wastewater treatment system operated by the permittee nor the current users meet the conditions necessitating the development and implementation a pretreatment program. Although current conditions do not warrant a pretreatment program the permittee shall continue to enforce the general and specific prohibitions listed in Sections 3.1.1 and 3.1.2**Error! Reference source not found.** respectively of this permit. The permittee shall at a minimum conduct annual industrial wastes surveys to determine if there has been changes to the industrial users' discharges that would necessitate the development an implementation of a pretreatment program. In the event the permittee becomes aware of a new industrial user or modification to an existing industrial user the permittee shall require the submission of an industrial waste survey fore evaluation. Should any industrial waste survey indicate that a pretreatment program is required the permittee shall notify DOW within 30 days of this determination and provide a schedule not to exceed one year for development and implementation of the pretreatment program. The permittee shall submit to DOW an annual report by January 28th of the following year detailing the results of the annual and any other industrial waste surveys reviewed.

3.1.1. General Prohibitions

No user is to introduce to a POTW any pollutant or pollutants that will cause pass through or interference even if the user is not subject to National Pretreatment Standards or any national, state, or local requirements. A user shall have an affirmative defense against a violation of the general prohibitions where the user can demonstrate that:

(1) It did not know or have reason to know that its discharge singly or in conjunction with other discharges would result in pass through or interference with the POTW; and
(2) The discharge met the local limit designed to prevent pass through or interference or in the case of no local limit the user's discharge did not substantially change in nature or substance during the occurrence from the pre-occurrence conditions.

3.1.2. Specific Prohibitions

No user is to introduce to a POTW any of the following pollutants:

(1) Pollutants which create a fire or explosion hazard, including but not limited to, wastestreams with a closed cup flashpoint of less than 140 °F (60 °C);
(2) Pollutants which will cause corrosive structural damage or have a pH less than 5.0 standard units unless the POTW is designed to accommodate such pH levels;
(3) Solid or viscous pollutants in amounts that would obstruct the flow to the POTW thus resulting in interference;
(4) Any pollutant released in a discharge at such a volume or strength as to cause interference in the POTW;
(5) Heat in amounts that will inhibit biological activity in the POTW thus resulting in interference. In no case heat in such quantities that the temperature at the POTW treatment plant exceeds 104 °F (40 °C) unless the POTW requests and the Approval Authority grants alternate temperature limits;
(6) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass-through;
(7) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems; and,
(8) Any trucked or hauled waste except, at discharge points designated by the POTW

3.2. Mixing Zone

The permittee did not request a mixing zone.

3.3. Best Management Practices

3.3.1. BMP - General Conditions

3.3.1.1. BMP - Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to KRS 224.01-010(35) and who have ancillary manufacturing operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.01-400, as amended, or any regulation promulgated pursuant thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

3.3.1.2. BMP - Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan consistent with 401 KAR 5:065, Section 2(10) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. A Best Management Practices (BMP) plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents.

3.3.1.3. BMP - Implementation

If this is the first time for the BMP requirement, then the plan shall be developed and submitted to the Division of Water within 90 days of the effective date of the permit. Implementation shall be within 180 days of that submission. For permit renewals the plan in effect at the time of permit reissuance shall remain in effect. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be submitted to the Division of Water and implemented as soon as possible.

3.3.1.4. BMP - General Requirements

The BMP plan shall:

a. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.

b. Establish specific objectives for the control of toxic and hazardous pollutants.

(1) Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants," the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.

c. Establish specific Best Management Practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants."

d. Include any special conditions established in part b of this section.

e. Be reviewed by plant engineering staff and the plant manager.

3.3.1.5. BMP - Specific Requirements

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document," and shall include the following baseline BMPs as a minimum.

a. BMP Committee
b. Reporting of BMP Incidents
c. Risk Identification and Assessment
d. Employee Training
e. Inspections and Records
f. Preventive Maintenance
g. Good Housekeeping
h. Materials Compatibility
i. Security
j. Materials Inventory

3.3.1.6. BMP - SPCC Plans

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

3.3.1.7. BMP - Hazardous Waste Management

The permittee shall assure the proper management of solid and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.) Management practices required under RCRA regulations shall be referenced in the BMP plan.

3.3.1.8. BMP - Documentation

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available upon request to EEC personnel. Initial copies and modifications thereof shall be sent to the following addresses when required by Section 3.3.1.9:

Division of Water
Surface Water Permits Branch
Operational Permits Section
200 Fair Oaks Lane
Frankfort, Kentucky 40601

3.3.1.9. BMP - Modification

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in the release of "BMP pollutants."

3.3.1.10. BMP - Modification for Ineffectiveness

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of "BMP pollutants," then the specific objectives and requirements under paragraphs b and c of Section 4, the permit, and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements. If at any time following the issuance of this permit the BMP plan is found to be inadequate pursuant to a state or federal site inspection or plan review, the plan shall be modified to incorporate such changes necessary to resolve the concerns.

3.3.2. BMP - Specific Conditions

3.3.2.1. BMP - Periodically Discharged Wastewaters Not Specifically Covered by Effluent Conditions

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.

4. STATE CONDITIONS

4.1. Outfall Signage

The KPDES permit establishes monitoring points, effluent limitations, and other conditions to address discharges from the permitted facility. In an effort to better document and clarify these locations the permittee should place and maintain a permanent marker at each of the monitoring locations.

4.2. Discharge and Monitoring Point Accessibility

As previously stated in Section 2.2.4.9, the permittee shall allow authorized agency representatives to inspect the facility and collect samples to determine compliance. In order for such monitoring to be conducted either by the permittee or authorized agency personnel all monitoring and discharge points required by this permit shall be readily and safely accessible in all weather conditions.

4.3. Certified Operators

Pursuant to 401 KAR 5:010:

A treatment plant with a design capacity of more than 50,000 gallons per day, but less than or equal to two (2) million gallons per day shall be under the primary responsibility of a certified operator holding an active Class II, III, or IV treatment certificate.

4.3.1. Application Monitoring

To ensure that sufficient samples are collected and analyzed DOW is imposing annual sampling and reporting for those parameters in Sections A.12 and B.6 of KPDES Form A. The results of the application monitoring shall be submitted on an annual DMR and summarized on the renewal application.

5. ABBREVIATIONS, ACRONYMS AND DEFINITIONS

Abbreviation or Acronym	Full Phrase	Definition
MGD	Million Gallons Per Day	A measure of flow
cfs	cubic feet per second	A measure of flow
SU	Standard Units	A measure of pH
mg/l	milligrams per liter	A measure of pollutant concentration (1000 milligrams = 1 gram)
µg/l	micrograms per liter	A measure of pollutant concentration (1000 micrograms = 1 milligram)
°F	Degrees Fahrenheit	A measure of temperature
°C	Degrees Centigrade or Celsius	A measure of temperature
N/A	Not Applicable	
lbs/day	pounds per day	A measure of pollutant loading
Grab	Grab Sample	A sample taken from a wastestream on a one-time basis without consideration of the flow rate of the wastestream and without consideration of time.
24-Hr Composite	24-hour Composite Sample	Sample composed of discrete equal volume aliquots (100 ml minimum) collected every 15 minutes over a 24-hour period and aggregated by an automated sampling device. The aggregate sample will reflect the average water quality of the compositing or sample period.

KOC_____

AN ORDINANCE RELATING TO _____

592

LEWIS COUNTY FISCAL COURT
ORDINANCE NO. 97-01

NOTICE OF ADOPTION AND PASSAGE OF
ORDINANCE RELATING TO SANITATION DISTRICTS

Please take notice that second reading of Ordinance No. 97-01 was held and said Ordinance was adopted and passed at a meeting of the Lewis County Fiscal Court on Monday, March 10, 1997, at 4:00 p.m. at the Lewis County Fiscal Courtroom, Courthouse, Vanceburg, Kentucky. Said Ordinance is now effective.

A summary of said Ordinance is as follows:

An ordinance enabling Sanitation Districts within Lewis County, Kentucky, to adopt the ordinance in full or in part, and to adopt rules and regulations concerning sanitary sewage systems, including but not limited to: sewer connections; requirement of all sources of flowable sewage to be connected to available sewer line; Prohibition of non-sewer facilities; Approval of sewer connections; costs of sewer installations; prohibition of deposit of certain substances in the system; and penalties for violation of the ordinance.

George M. Plummer
George M. Plummer,
Lewis County Judge Executive

Attest: Robert Blaine
Robert Blaine
Fiscal Court Clerk

Clayton G. Lykins, Jr.
Lewis County Attorney

STATE OF KENTUCKY, /
COUNTY OF LEWIS, / SCT.,

I, Shirley A. Hinton, County Clerk, for the County and State aforesaid, hereby certify that the foregoing Ordinance No 97-01 relating to sanitation districts, was published in the March 4th, 1997 edition of the Lewis County Herald, whereupon the same with the foregoing and this Certificate, hath been duly recorded in my said office.

Given under my hand, this 30th day of May, 1997.

Shirley A. Hinton, Clerk
By: Virginia J. Hunt D.C.,

FMFS	Federal Metal Finishing Standard.
KPDES	Kentucky Pollutant Discharge Elimination System.
l	Liter
mg	Milligrams
mg/l	Milligrams per liter.
NPDES	National Pollutant Discharge Elimination System.
POTW	Publicly Owned Treatment Works.
SIC	Standard Industrial Classification.
SWDA	Solid Waste Disposal Act, 42 U.S.C. 6901, et. seq.
TSS	Total suspended solids.
USC	United States Code.

ARTICLE II - USE OF PUBLIC SEWERS

A. Mandatory Sewer Connection

1. The owner(s) of all houses buildings, or properties used for human occupancy, employment, recreation, or other purposes, situated within the District and abutting on any street, alley, or right-of-way in which there is now located or may in the future be located a public sanitary sewer of the District, is hereby required at the owner's expense to install suitable toilet facilities therein and to connect such facilities directly with the proper public sewer in accordance with the provisions of this Ordinance, within thirty (30) days after date of official notice to do so provided that said public sewer is within one hundred (100) feet (30.5 meters) of the property line.

2. It shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended or used for the disposal of wastewater where public sanitary sewer service is available, as defined in paragraph 1, except as provided for in "Private Wastewater Disposal" (Article III). The existence within the District wherever the services of the District sanitary sewage collection, treatment and disposal facilities are available, or may hereafter be made available (as the term "available" is hereinbefore defined), of septic tanks, seepage laterals, privys, earth pits, cesspools, sanitary waste vaults, sewage drainage fields, private sewage disposal systems, or any other such facilities or works for the disposition of sanitary sewage wastes other than the facilities of the District is hereby declared to be a menace to the public health, safety, and general welfare of the citizens and inhabitants of the District is hereby determined and declared to constitute a public nuisance. The existence of such facilities as toilets, sinks, wash basins, showerbaths, bathtubs, any commercial or industrial machinery or device producing a liquid waste product, etc., in or upon any improved property or premises in said District where the facilities of the District's sewage collection,

District and its inhabitants, unless such facilities are connected to the District's sewage collection, treatment and disposal system. The Superintendent may prescribe the type and manner of connection to said facilities, and may require that each connection be supervised and inspected by an authorized and qualified agent of the District's sewer department.

3. At such time as a public sewer becomes available to a property served by a private wastewater disposal system, a direct connection shall be made to the public sewer system in compliance with this Ordinance, and any septic tanks, cesspools and similar private wastewater disposal facilities shall be cleaned of sludge and filled with suitable material or salvaged and removed.

B. Unlawful Discharge to Storm Sewers or Natural Outlets

1. It shall be unlawful for any person to place, deposit, or permit to be deposited in any unsanitary manner on public or private property within the Sanitation District, or in any area under the jurisdiction of said District into any sewer which connects to the storm sewer system of the Sanitation District any objectionable wastewater or industrial wastes.

2. It shall be unlawful to discharge to any natural outlet within the District or in any area under the jurisdiction of said District wastewater or other polluted waters, except where suitable treatment has been provided in accordance with subsequent provisions of this Ordinance. No provision of this Ordinance shall be construed to relieve the owner of a discharge to any natural outlet of the responsibility for complying with applicable State and Federal Regulations governing such discharge.

C. Compliance with Local, State, and Federal Laws

1. The discharge of any wastewater into the public sewer system by any person is unlawful except in compliance with the provisions of this Ordinance, and any more stringent State or Federal Standards promulgated pursuant to the Federal Water Pollution Control Act Amendments of 1972, the Clean Water Act of 1977, and subsequent amendments.

D. Discharge of Unpolluted Waters into Sewer

1. No person(s) shall discharge or cause to be discharged through any leak, defect, or connection any unpolluted waters such as stormwater groundwater, roof runoff, subsurface drainage, or cooling water to any sanitary sewer, building sewer, building drain or building plumbing. The Superintendent or his representative shall have the right, at any time, to inspect the inside or outside of buildings or

Such waters shall not be removed through the dual use of a sanitary drain sump or a sump pump to building sanitary sewer. Discharge of such waters by a manual switch-over from sanitary sewer to storm drainage will not be an acceptable method of separation. In case both storm and sanitary sewage is present, separate drainage or pumping system shall be included.

2. Stormwater, groundwater and all other unpolluted drainage may be discharged to such sewers as are used as storm sewers approved by the Superintendent. Unpolluted cooling water or unpolluted process waters may be discharged, on approval of the Superintendent to a storm sewer or natural outlet. Under no circumstances shall sanitary sewage be discharged to a storm sewer.

3. The owners of any building sewers having such connections, leaks, or defects shall bear all costs incidental to removal of such sources.

E. Substances Which Interfere

No user shall contribute or cause to be contributed, directly or indirectly, any pollutant or wastewater which will interfere with the operation or performance of the POTW. These general prohibitions apply to all such users of a POTW whether or not the user is subject to National Categorical Pretreatment Standards or any other National, State, or Local Pretreatment Standards or Requirements. A user shall not contribute the following substance to any POTW:

1. Any liquids, solids or gasses which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fire or explosion or be injurious in any other way to the POTW or to the operation of the POTW. At no time shall two successive readings on an explosion hazard meter, at the point of discharge into the system (or at any point in the system) be more than five percent (5%) nor any single reading over ten percent (10%) of the Lower Explosive Limit (LEL) of the meter. Prohibited materials include, but are not limited to gasoline, kerosene, naphta, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, and any other substances which have a closed cup flash point of 140° F (60°C) or less, and any substance which the District, the State or EPA has notified the user is a fire hazard or a hazard to the system.

2. Any wastewater containing toxic pollutants in sufficient quantity, either singly or by interactions with other pollutants, to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, create a toxic effect in the receiving waters of the POTW, or to exceed the limitation set forth in a Categorical Pretreatment Standard. A toxic pollutant shall include but not be limited to any pollutant identified pursuant to Section 307(a) of the Act.

other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the POTW.

4. Any slug load or pollutants, including oxygen demanding pollutants (BOD, etc.), released at a flow or concentration that will cause interference.

5. Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the wastewater facilities such as, but not limited to, ashes, bones, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, whole blood, paunch manure, hair and fleshings, entrails and paper dishes, cups, milk containers, etc. either whole or ground; spent lime, stone or marble dust, grass clippings, spent grains, spent hops, waste paper, gas, asphalt residues, unground garbage, residues from refining or processing of fuel or lubricating oil, or glass grinding or polishing wastes.

6. Any wastewater with objectionable color not removable in the POTW, but in no case, wastewater with a color at the introduction into the POTW that exceeds 300 ADMI units.

7. Any wastewater having a temperature which will inhibit biological activity in the POTW treatment plant resulting in interference, but in no case wastewater with a temperature at the introduction into the POTW that will result in a treatment plant influent temperature which exceeds 104 degrees Fahrenheit (40 degrees Celsius)

8. Any wastewater at the introduction to the POTW with a temperature which exceeds 150 degrees Fahrenheit (65 degrees Celsius).

9. Any noxious or malodorous liquids, gases, or solids which either singly or by interaction with other wastes are sufficient to create a public nuisance or hazard to life or are sufficient to prevent entry into the sewers for their maintenance or repair.

10. Any substances which may cause the POTW's effluent or any other product of the POTW such as residues, sludges, or scum to be unsuitable for reclamation and reuse or to interfere with the reclamation process where the POTW is pursuing a reuse and reclamation program. In no case shall a substance discharged to the POTW cause the POTW to be in non-compliance with sludge use or disposal criteria, guidelines or regulations developed under Section 405 of the Act; any criteria, guideline, or regulations affecting sludge use or disposal developed pursuant to the Solid Waste Disposal Act, the Clean Air Act, the Toxic Substances Control Act, or State criteria applicable to the sludge management method being used.

sludge disposal system permit or the receiving water quality standards.

12. Any wastewater containing any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the Superintendent in compliance with applicable State or Federal Regulations.

13. Any wastewater containing strong acids, iron pickling wastes, or concentrated plating solutions.

14. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass - through at the POTW.

15. Any wastewater which causes a hazard to human life or creates a public nuisance.

ARTICLE III - PRIVATE WASTEWATER DISPOSAL

A. Public Sewer Not Available

1. Where a public sanitary sewer is not available under the provisions of "Use of Public Sewer" (Article II), the building sewer shall be connected, until the public sewer system is available, to a private wastewater disposal system complying with the provisions of applicable local and State Regulations.

2. The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times, at no expense to the District. When it becomes necessary, the sludge may be disposed of only as approved by the District by operators licensed by the District for such purposes.

3. No statement contained in this Article shall be construed to interfere with any additional requirements that may be imposed by applicable local or State Regulations.

4. Holder of NPDES/KPDES Permits Expected.

   Industries with current KPDES/KPDES permits may discharge at permitted discharge points provided they are in compliance with the conditions of said permit.

B. Requirements for Installation

1. The type, capacity, location and layout of a private sewage disposal system shall comply with all local or State Regulations. Before commencement of construction of a private sewage disposal system, the owner shall first obtain a written permit

Lewis County Sanitation Dist. #1
P.O. Box 298
Tollesboro, KY 41189

Phone: 606-798-1279
Fax: 606-798-1279

Dora Thomas, Chairman
Sue Jane Bane, Secretary
Jeanette Applegate, Treasurer
Anthony Hunt, Manager

SEWER RATES & FEES
EFFECTIVE JANUARY 1, 2008

Usage rates:	$17.05	1st 1000 Gallons
	$7.20	Each Additional 1000 Gallons usage
	$34.00	Non-metered flat rate
Sewer Deposit:	$75.00	
Late Fee:	10% of charges	
Reconnect fee:	$35.00	
Sewer tap fee:	$550.00	

All other charges and fees are in accordance with Western Lewis – Rectorville Water & Gas Districts fees.

Sincerely,
Anthony Hunt, Mgr.

Lewis County Health Department

Board of Health Members

Joe Bentley
Board Chairman

Wilma Dunbar
Board Secretary

Dr. Maurice Esham
Thomas "Grover" Evans
Chad Evans
Barbara Jordan Kerns
Todd Ruckel
Ron Mays, DMD
Eugena O'Cull
Dr. Sarah Porter, DO
Darin Stanfield DVM
L. Michael Bertram, OD

Anita Bertram
Public Health Director

April 17, 2014

Sisler-Maggard Engineering, PLLC
220 East Reynolds Road, Suite A3
Lexington, KY 40517

Dear Sir or Madam:

This letter is in response to a request on the status of the Tollesboro Municipal Sewer system, located in and around Tollesboro, KY. Tollesboro is in need of any and all system upgrades/extensions available due to unusually poor soil conditions in the area. Shallow massive-clay conditions and shallow bedrock make most subsurface sewage systems (Onsite) extremely cost prohibitive to install and maintain. Standard subsurface systems aren't generally possible. Expensive upgrades are required to install a new system; while many older failing systems in the area often don't possess the required area for upgrading existing system to current code.

While we have never completed an official count, many of our "straight-pipe" complaints and failing system complaints originate from this area of the county due to the poor soil conditions, often resulting in formal legal proceedings to eventually remedy the issue(s). Many systems are failing due to undersized lateral fields or poor backfill soil conditions. These range from ~10-30 years old and many are simply failing due to age.

The best solution would be to expand the existing municipal system to pick up as many un-served residences as possible. It would be better for the environment in and around the Tollesboro area.

Sincerely,

Travis Patton, RS
Environmentalist III
Lewis County Health Department

Public Health
Prevent. Promote. Protect.

185 Commercial Drive
P.O. Box 219
Vanceburg, Ky 41179
We are an equal opportunity employer and provider.

PHONE (606) 796-2632
FAX (606) 796-9285
E-MAIL anitaj.bertram@ky.gov
WEB SITE http://www.lcphd.org
For hearing impaired services dial 711

Lewis County Health Department

P.O. Box 219
Vanceburg, Kentucky 41179
Phone (606) 796-2632
Fax (606) 796-9285

September 17, 2013

Sisler-Maggard Engineering, PLLC
220 East Reynolds Road, Suite A3
Lexington, KY 40517

Dear Sir or Madam:

This letter is in response to a request on the status of the Tollesboro Municipal Sewer system, Located in and around Tollesboro, KY. Tollesboro is in need of this system due to unusually poor soil conditions in the area. Shallow clay and shallow bedrock make most subsurface sewage systems (Onsite) extremely cost prohibitive to install and maintain.

The best solution would be to expand the existing municipal system to pick up as many un-served residences as possible. It would be better for the environment in and around the Tollesboro area.

Sincerely,

Travis Patton, RS
Environmentalist III
Lewis County Health Department

ALTERNATE - A

ENGINEERS ESTIMATE

CONTRACT NO. 7 - GRAVITY SEWER & PUMP STATIONS

LEWIS COUNTY SANITATION DISTRICT NO.1

S.R 10 TO MASON COUNTY LINE (62 CUSTOMERS)

ITEM NO.	ITEM DESCRIPTION	UNIT QUANTITY		UNIT COST	TOTAL COST
1	8" GRAVITY SEWER (0-10'DEEP)	7,912	LF	$38.00	$300,656.00
2	8" GRAVITY SEWER (10-16' DEEP)	3,644	LF	$48.00	$174,912.00
3	6" GRAVITY SEWER (0-10' DEEP)	345	LF	$32.00	$11,040.00
4	4" SERVICE LATERALS (@ 15' EACH)	825	LF	$25.00	$20,625.00
5	16" BORE & JACK (STEEL CASING) W/8" CARRIER PIPE	30	LF	$200.00	$6,000.00
6	STD MH (0-5' DEEP) W/O FRAME & LID	5	EA	$1,500.00	$7,500.00
7	STD MH (5-12' DEEP) W/O FRAME & LID	28	EA	$2,500.00	$70,000.00
8	STD MH 12' DEEP & OVER W/O FRAME LID	3	EA	$3,500.00	$10,500.00
9	WATERTIGHT MH FRAME & LID	36	EA	$400.00	$14,400.00
10	8" x 4" WYE CONNECTION TAPS	51	EA	$150.00	$7,650.00
11	6" x 4" WYE CONNECTION TAPS	4	EA	$140.00	$560.00
12	1 1/2" CLEAN OUT (FM)	1	EA	$500.00	$500.00
13	6" CLEAN OUT	1	EA	$600.00	$600.00
14	LATERAL CONNECTION ASSEMBLY	14	EA	$500.00	$7,000.00
15	INLINE FLUSHING VALVE CONNECTION	1	EA	$2,500.00	$2,500.00
16	ASPHALT PAVEMENT SURFACE REPLACEMENT (HD)	47	SY	$75.00	$3,525.00
17	ASPHALT PAVEMENT SURFACE REPLACEMENT (LD)	68	SY	$50.00	$3,400.00
18	CONCRETE SURFACE REPLACEMENT	20	SY	$60.00	$1,200.00
19	GRAVEL SURFACE REPLACEMENT	100	SY	$25.00	$2,500.00
20	CONCRETE ENCASEMENT	30	LF	$40.00	$1,200.00
21	1 1/4" PVC (SDR26) FORCE MAIN	3,480	LF	$5.00	$17,400.00
22	1 1/2" PVC (SDR 26) FORCE MAIN	530	LF	$6.00	$3,180.00
23	4" PVC (SDR 26) FORCE MAIN	2,285	LF	$7.00	$15,995.00
24	AIR RELEASE / VACUUM VALVE	1	EA	$3,500.00	$3,500.00
25	CONNECT FM TO MH	6	EA	$750.00	$4,500.00
26	GRINDER PUMP STATION INDIVIDUAL (SIMPLEX)	14	EA	$4,500.00	$63,000.00
27	PUMP STATION #11 - 3 H.P.	1	EA	$125,000.00	$125,000.00
28	PUMP STATION #12 - 5 H.P. WITH CHEMICAL FEED	1	EA	$175,000.00	$175,000.00
29	PUMP STATION #13 - 3 H.P.	1	EA	$100,000.00	$100,000.00
	TOTAL ESTIMATED CONSTRUCTION COSTS				**$1,153,843.00**

+/- Contingency (10%)	=	$116,157.00
Estimated Construction Cost	=	**$1,270,000.00**
Engineering Fees		
Basic	=	$108,000.00
Additional (easements, permits, etc.)	=	$25,000.00
Resident Inspection	=	$67,000.00
Legal & Administrative	=	$20,000.00
Admin Fees	=	$25,000.00
Misc. Items	=	$5,000.00
Total Estimated Project Cost		**$1,520,000.00**

ALTERNATE - B

ENGINEERS ESTIMATE
LEWIS COUNTY SANITATION DISTRICT NO. 1
CONTRACT NO. 7 - FORCE MAINS AND G.P.S
S.R 10 TO MASON COUNTY LINE
(62 CUSTOMERS)

ITEM NO.	ITEM DESCRIPTION	UNIT QUANTITY		UNIT COST	TOTAL COST
1	3" PVC (SDR 21) Force Main	7,300	LF	$7.00	$51,100.00
2	2-1/2" PVC (SDR21) Force Main	630	LF	$6.50	$4,095.00
3	2" PVC (SDR 21) Force Main	4,800	LF	$6.00	$28,800.00
4	1 1/2" PVC (SDR 21) Force Main	1,500	LF	$5.00	$7,500.00
5	1 1/4" PVC (SDR 21) Force Main	8,200	LF	$4.50	$36,900.00
6	4" Service Laterals	600	LF	$20.00	$12,000.00
7	Cleanouts	25	EA	$900.00	$22,500.00
8	3" Valves	3	EA	$700.00	$2,100.00
9	2-1/2" Valves	1	EA	$650.00	$650.00
10	2" Valves	5	EA	$550.00	$2,750.00
11	1 1/2" Valves	4	EA	$450.00	$1,800.00
12	1 1/4" Valves	2	EA	$350.00	$700.00
13	Air Release/ Vaccum Valves	6	EA	$500.00	$3,000.00
14	Pavement Replacement (L.D.)	50	SY	$40.00	$2,000.00
15	Pavement Replacement (H.D.)	50	SY	$80.00	$4,000.00
16	Concrete Replacement	30	SY	$75.00	$2,250.00
17	Gravel Replacement	54	SY	$20.00	$1,080.00
18	Concrete Encasement	40	LF	$40.00	$1,600.00
19	Push Under Roads (2" PVC SDR21)	30	LF	$50.00	$1,500.00
20	Push Under Roads (Service)	300	LF	$30.00	$9,000.00
21	Connect 3" FM to ex. MH	1	EA	$1,275.00	$1,275.00
22	Lateral Connection Assembly	62	EA	$400.00	$24,800.00
23	Grinder Pump Station (Individual)	62	EA	$5,300.00	$328,600.00
	TOTAL ESTIMATED CONSTRUCTION COSTS				$550,000.00

+/- Contingency (10%)	=	$55,000.00
Estimated Construction Cost	=	**$605,000.00**
Engineering Fees		
Basic (9.85%)	=	$55,000.00
Additional (easements, permits, etc.)	=	$10,000.00
Resident Inspection (6.92%)	=	$40,000.00
Legal & Administrative	=	$10,000.00
Admin Fees	=	$15,000.00
Misc. Items	=	$4,000.00
Total Estimated Project Cost		**$739,000.00**

ALTERNATE - C

ENGINEERS ESTIMATE (GRAVITY AND LOW PRESSURE)
LEWIS COUNTY SANITATION DISTRICT NO. 1
CONTRACT NO. 7 - SEWER LINES, FORCE MAINS AND G.P.S
S.R 10 TO MASON COUNTY LINE
(62 CUSTOMERS)

ITEM NO.	ITEM DESCRIPTION	UNIT QUANTITY		UNIT COST	TOTAL COST
1	8" Gravity Sewer (All Depths)	8,200	LF	$35.00	$287,000.00
2	6" Gravity Sewer (0-10" Deep)	150	LF	$25.00	$3,750.00
3	4" Service Laterals	1300	LF	$22.50	$29,250.00
4	8" Bore & Jack (12" Steel Casing) w/ 3" carrier pipe	50	LF	$125.00	$6,250.00
5	Std MH (All Depths) w/o Frame & Lid	26	EA	$2,000.00	$52,000.00
6	Std MH Frame & Lid	26	EA	$300.00	$7,800.00
7	8" x 4" WYE Connection	43	EA	$200.00	$8,600.00
8	1 1/2" Clean Out		EA	$700.00	$0.00
9	3" Clean Out		EA	$700.00	$0.00
10	4" Clean Out @ end of 4" Laterals	43	EA	$150.00	$6,450.00
11	6" Clean Out	1	EA	$400.00	$400.00
12	Lateral Connection Assembly	12	EA	$700.00	$8,400.00
13	Inline Flushing Valve Connection	12	EA	$1,500.00	$18,000.00
14	Pavement Replacment (HD)	50	SY	$50.00	$2,500.00
15	Pavement Replacement (LD)	200	SY	$35.00	$7,000.00
16	Gravel Surface Replacement	400	SY	$25.00	$10,000.00
17	Concrete Encasement	50	LF	$25.00	$1,250.00
18	1 1/4" PVC (SDR 26) force main	5300	LF	$4.50	$23,850.00
19	1 1/2" PVC (SDR 26) force main	1600	LF	$5.00	$8,000.00
20	3" PVC (SDR 26) force main	4200	LF	$6.00	$25,200.00
21	4" PVC (SDR 26) force main		LF	$8.00	$0.00
22	8" PVC (SDR 26) force main	6500	LF	$11.00	$71,500.00
23	Air Release/Vacuum Valve	4	EA	$2,500.00	$10,000.00
24	Misc. Cleanouts, Valves, Etc.	15	EA	$800.00	$12,000.00
25	Connect FM to MH		EA	$500.00	$0.00
26	Grinder Pump Station (Individual)	12	EA	$5,500.00	$66,000.00
27	Tie-in 8" FM & 3" FM	2	EA	$1,000.00	$2,000.00
28	Connection 8" PVC gravity to Existing MH	2	EA	$1,000.00	$2,000.00
29	Connection 4" Lateral to MH	6	EA	$400.00	$2,400.00
30	Connection 1 1/2" FM to MH	3	EA	$400.00	$1,200.00
31	Connection 1 1/4" FM to MH	1	EA	$300.00	$300.00
32	8" Road Bore & Jack for 4" Service	40	LF	$75.00	$3,000.00
33	Road Pushes (Service)	150	LF	$30.00	$4,500.00
34	6' Dia P.S. @ 12' Deep	1	EA	$125,000.00	$125,000.00
35	10' Dia P.S. @ 12' Deep	1	EA	$200,000.00	$200,000.00
	TOTAL ESTIMATED CONSTRUCTION COSTS				$1,005,600.00

+/- Contingency (10%)	=	$94,400.00
Construction Cost	=	**$1,100,000.00**
Engineering Fees		
Basic	=	$89,000.00
Additional (easements, permits, etc.)	=	$15,000.00
Resident Inspection	=	$56,000.00
Legal & Administrative	=	$15,000.00
Admin Fees	=	$45,000.00
Misc. Items	=	$10,000.00
Total Estimated Project Cost		**$1,330,000.00**

ENGINEERS ESTIMATE (LOW PRESSURE)
LEWIS COUNTY SANITATION DISTRICT NO. 1
CONTRACT NO. 8 - SEWER LINES, FORCE MAINS AND G.P.S
S.R 1237 TO BURTONVILLE

ITEM NO.	ITEM DESCRIPTION	UNIT QUANTITY		UNIT COST	TOTAL COST
1	3" PVC (SDR 26) force main	26,000	LF	$6.50	$169,000.00
2	2" PVC (SDR 26) force main	13,000	LF	$6.00	$78,000.00
3	1 1/2" PVC (SDR 26) force main	9,000	LF	$5.00	$45,000.00
4	1 1/4" PVC (SDR 26) force main	34,000	LF	$4.50	$153,000.00
5	4" Service Laterals	2,000	LF	$20.00	$40,000.00
6	Cleanouts	8	EA	$900.00	$7,200.00
7	Flush Valves (All Singles)	6	EA	$1,000.00	$6,000.00
8	3" Valves	6	EA	$700.00	$4,200.00
9	2" Valves	4	EA	$550.00	$2,200.00
10	1 1/2" Valves	5	EA	$450.00	$2,250.00
11	1 1/4" Valves	3	EA	$350.00	$1,050.00
12	Misc. Fittings etc.	1	LS	$10,000.00	$10,000.00
13	Air Release Valves	6	EA	$800.00	$4,800.00
14	Pavement Replacement (L.D.)	100	SY	$40.00	$4,000.00
15	Pavement Replacement (H.D.)	50	SY	$50.00	$2,500.00
16	Gravel Replacement	500	SY	$20.00	$10,000.00
17	Concrete Encasement	200	LF	$30.00	$6,000.00
18	Push Under Roads (Service Lines)	1,000	LF	$20.00	$20,000.00
19	Connect 3" FM	1	EA	$800.00	$800.00
20	Grinder Pump Station (Individual)	152	EA	$5,000.00	$760,000.00
21	Lateral Connection Assembly	152	EA	$400.00	$60,800.00
22	Bore and Jack w/casing (All Sizes)	120	LF	$100.00	$12,000.00
23	Expand Pump Stations No. 9 & 10	2	EA	$40,000.00	$80,000.00
	TOTAL ESTIMATED CONSTRUCTION COSTS				**$1,478,800.00**

Contingency (+/- 10%)	=	$147,200.00
Estimated Construction Cost	=	**$1,626,000.00**
Engineering Fees		
Basic (8.10% x $1,626.000 = $131,706)	=	$131,000.00
Additional (easements, permits, etc.)	=	$20,000.00
Resident Inspection (4.97% x $1,626,000 = $80,812)	=	$81,000.00
Legal & Administrative (Legal $24,000 & Admin. $4,000)	=	$28,000.00
Admin Fees (BTADD)	=	$24,000.00
Misc. Items	=	$5,000.00
Total Estimated Project Cost		**$1,915,000.00**

STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
Division of Water
525 Hecks Plaza Dr
Morehead (Rowan), KY 40351-1346
www.kentucky.gov

May 20, 2011

Certified No. 7009 0080 0001 8610 1818
Return Receipt Requested

Lewis Co Sanitation District 1
Old Pine Valley Road
Tollesboro, KY 41189

Re: Notice of Violation
AI ID: 2705
AI Name: Lewis Co Sanitation District 1
Activity ID: ENV20110001
Permit No. KY0102601
Lewis County, KY

Dear Ms. Thomas:

The Kentucky Department for Environmental Protection (DEP) has issued the enclosed Notice of Violation for multiple exceedences of permitted effluent limits. Please review this Notice of Violation carefully to ensure that all remedial measures are completed by the specified deadlines.

Your cooperation and attention to this matter is appreciated. If you have any questions, please contact me at 606-783-8655.

Sincerely,

Mr. Matthew Gross,
Environmental Inspector II
Division of Water

Enclosure

COMMONWEALTH OF KENTUCKY
ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
Division of Water

NOTICE OF VIOLATION

To: Lewis Co Sanitation District 1
Old Pine Valley Road
Tollesboro, KY 41189

AI Name: Lewis Co Sanitation District 1
Discovery ID: CIN20110002
Enforcement Case ID:
Date(s) Violation(s) Observed: 04/21/2011

AI ID: 2705
County: Lewis

Activity ID: ENV20110001

This is to advise that you are in violation of the provisions cited below:

1 Violation Description for Subject Item AIOO00000027050:

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and KRS 224 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

[40 C.F.R. 122.41(a)]

[401 KAR 5:065 Section 2(1)]

Description of Non Compliance:

DMRs from August 2010 to February 2011 were reviewed. The following exceedences of permitted effluent limits were noted:

DO minimum: August 2010.

7 Day Geometric Mean, Fecal Coliform: January 2011.

Maximum Weekly Average Quantity, TAN: October, November, December 2010. January, February 2011.

Maximum Weekly Average Concentration, TAN: August, September, October, November, December 2010. January, February 2011.

Monthly Average Quantity, TAN: October, November, December 2010. January, February 2011.

Monthly Average Concentration, TAN: August, September, October, November, December 2010. January, February 2011.

Based on submitted monitoring results, the plant does not appear to be capable of effectively treating for Total Ammonia Nitrogen (TAN) without modifications to the treatment process.

The remedial measure(s), and date(s) to be completed by are as follows:

- The permittee shall comply with effluent limitations and all conditions of the KPDES permit.

- The permittee shall submit a written corrective action plan (CAP) to the Morehead Regional Office.

- The CAP shall describe the measures taken by the facility to return to compliance and an expected time of completion for all corrective measures.

- The CAP shall be submitted **no later than 24 June 2011.**

[401 KAR 5:065 Section 2(1), 40 CFR 122..41(a)]

2 **Violation Description for Subject Item AIOO0000002705():**

No person shall directly, or indirectly, throw, drain, run or otherwise discharge into any of the waters of the Commonwealth, or cause, permit or suffer to be thrown, drained, run otherwise discarged into such waters any pollutant, or any substance that shall cause or contribute to the pollution of the waters of the commonwealth in contravention of the standards adopted by the cabinet or in contravention of any of the rules, regulations, permits, or orders of the cabinet or in contravention of any of the provisions of this chapter.

[KRS 224.70-110].

Description of Non Compliance:

Effluent was visually acceptable on the day of the inspection. Submitted DMRs indicate that the plant cannot consistently comply with effluent limits for TAN.

The remedial measure(s), and date(s) to be completed by are as follows:

- The permittee shall comply with effluent limitations and all conditions of the KPDES permit.

- The permittee shall submit a written corrective action plan (CAP) to the Morehead Regional Office.

- The CAP shall describe the measures taken by the facility to return to compliance and an expected time of completion for all corrective measures.

- The CAP shall be submitted **no later than 24 June 2011.**

[KRS 224.70-110]

3 **Violation Description for Subject Item AIOO0000002705():**

Surface waters shall not be aesthetically or otherwise degraded.

[401 KAR 10:031 Section 2]

Description of Non Compliance:

Effluent was visually acceptable on the day of the inspection. Submitted DMRs indicate that the plant cannot consistently comply with effluent limits for TAN.

The remedial measure(s), and date(s) to be completed by are as follows:

- The permittee shall comply with effluent limitations and all conditions of the KPDES permit.

- The permittee shall submit a written corrective action plan (CAP) to the Morehead Regional Office.

- The CAP shall describe the measures taken by the facility to return to compliance and an expected time of completion for all corrective measures.

- The CAP shall be submitted **no later than 24 June 2011.**

[401 KAR 10:031 Section 2]

4 Violation Description for Subject Item AIOO00000002705():

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and KRS 224 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

~~[40 C.F.R. 122.41(a)]~~

[401 KAR 5:065 Section 2]

Description of Non Compliance:

The effluent has consistently exceeded permitted limits for TAN. The plant appears to be incapable of meeting permitted TAN limits without modifications to the treatment process.

The remedial measure(s), and date(s) to be completed by are as follows:

- The permittee shall comply with effluent limitations and all conditions of the KPDES permit.

- The permittee shall submit a written corrective action plan (CAP) to the Morehead Regional Office.

- The CAP shall describe the measures taken by the facility to return to compliance and an expected time of completion for all corrective measures.

- The CAP shall be submitted **no later than 24 June 2011.**

[401 KAR 5:065 Section 2(1), 40 CFR 122..41(a)]

Violations of the above cited statute(s) and/or regulation(s) are subject to a civil penalty per day per violation. Violations carry civil penalties of up to $25,000 per day per violation depending on the statutes/regulations violated. In addition, violations may be concurrently enjoined. Compliance with remedial measures and their deadlines does not provide exemption from liability for violations during the period of remediation, nor prevent additional remedial measures from being required.

If you have questions or need further information, write or call the undersigned:

Division of Water
Morehead Regional Office
525 Heck's Plaza Drive
Morehead, KY 40351
606-783-8655 (8:00 AM – 4:30 PM)
Mr. Matthew Gross, Environmental Inspector II

Issued By: _____
Mr. Matthew Gross, Environmental Inspector II
Date: May 20, 2011

Issued By: _____
Mr. Dan Fraley, Environmental Control Supervisor
Date: May 20, 2011

How Delivered: USPS Certified
Certified/Registered # 7009 0080 0001 8610 1818

STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
525 HECKS PLAZA DRIVE
MOREHEAD KY 40351
www.kentucky.gov

October 10, 2012

Lewis County Sanitation District 1
Tony Hunt, Manager
PO Box 298
Tollesboro, KY 41189

Re: Notice of Violation
AI ID: 2705
AI Name: Lewis Co Sanitation District 1
Activity ID: ENV20110001
Permit No. KY0102601
Lewis County, KY

Dear Mr. Hunt:

On May 25, 2011, the Division of Water issued the Lewis County Sanitation District 1 a Notice of Violation (NOV). The Morehead Regional Office appreciates the Lewis County Sanitation District 1's efforts to address the compliance issues raised by the NOV. The actions taken in response to the NOV are considered sufficient at this time with regard to the violations listed in the NOV. The Cabinet reserves its rights under KRS Chapter 224 and its administrative regulations to undertake such enforcement action hereafter as it deems appropriate, which may include consideration of the compliance issues addressed by the NOV. If you have any questions, please feel free to contact me at (606) 783-8655.

Sincerely,

Mr. Matthew Gross
Environmental Inspector III

c: Regional Office
Main File
Enforcement Specialist
Program

Energy and Environment Cabinet
Kentucky Department for Environmental Protection
Division of Water

Activity: CIV20120001 Investigation Followup

Lead Investigator: Gross, Matthew

Agency Interest/Permit ID: 2705

Agency Interest Name: Lewis Co Sanitation District 1

Agency Interest Address: Old Pine Valley Rd
Tollesboro, KY 41189

Program: Wastewater

County: Lewis

Type of Agency Interest: SANI-Wastewater Treatment & Collection (2213)

Agency Interest Contact: **Title:** **Phone:**

Purpose: Investigation Followup

Inspection Type: Incident Investigation

Inspection Date: 10/10/2012 **Start Time:** 02:00 PM **End Time:** 02:15 PM

Latitude: 38.55555600 **Longitude:** -83.57638900

Coordinate Collection Method: Decimal Degrees

Incident ID(s):

General Comments:
This investigation was conducted as a follow up to a NOV issued by the Morehead Regional Office. The investigation consisted of a file review. A NOV was issued in May of 2011 for exceedences of permitted effluent limits. The NOV required the facility to develop and submit a Corrective Action Plan (CAP) that addressed the permit excursions. The CAP was received by the Morehead Regional Office in June 2011. A review found the CAP to be adequate.

Person(s) Interviewed:

Name	Organization

Investigator: [signature] **Title:** Env. Insp. III **Date:** 10/15/12

- [ ] N - N-Not Applicable
- [ ] E - E-Not Evaluated
- [ ] V - V-Out of Compliance-NOV
- [ ] C - C-No Violations observed
- [ ] I - I-No Violations obs-but impending viol trends obs
- [ ] D - D-Out of Compliance-Violations Documented
- [ ] O - O-Out of Comp-LOW non-recurrent Adm. or O&M

Received By: **Title:** **Date:**

Delivery Method: USPS STANDARD

STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF ENFORCEMENT
300 FAIR OAKS LANE
FRANKFORT KENTUCKY 40601
www.kentucky.gov

October 30, 2013

CERTIFIED MAIL No. 7013 1090 0000 6752 6522
Return Receipt Requested

Lewis Co Sanitation District 1
Dora Thomas
PO Box 298
Tollesboro, KY 41189

Re: Notice of Violation
AI ID: 2705
AI Name: Lewis Co Sanitation District 1
Activity ID: ENV20130001
Facility No. KY0102601
Lewis County, KY

Dear Ms. Thomas:

The Kentucky Department for Environmental Protection (DEP) has issued the enclosed Notice of Violation for violations discovered at your facility. Please review this Notice of Violation carefully to ensure that all remedial measures are completed by the specified deadlines.

Your cooperation and attention to this matter is appreciated. If you have any questions, please contact me at (502) 564-2150, extension 3230.

Sincerely,

Michelle M. Rice, Enforcement Specialist
Compliance and Operations Branch

MMR/dp

Enclosure

COMMONWEALTH OF KENTUCKY
ENERGY and ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
Division of Enforcement

NOTICE OF VIOLATION

To: Lewis Co Sanitation District 1
Dora Thomas
PO Box 298
Tollesboro, KY 41189

AI Name: Lewis Co Sanitation District 1 **AI ID:** 2705 **Activity ID:** ENV20130001
County: Lewis
Facility Number: KY0102601
Date(s) Violation(s) Observed: 10/28/2013

This is to advise that you are in violation of the provisions cited below:

1 Violation Description for Subject Item AIOO0000002705():
No person shall, directly or indirectly, throw, drain, run or otherwise discharge into any of the waters of the Commonwealth, or cause, permit or suffer to be thrown, drained, run or otherwise discharged into such waters any pollutant, or any substance that shall cause or contribute to the pollution of the waters of the Commonwealth in contravention of the standards adopted by the cabinet or in contravention of any of the rules, regulations, permits, or orders of the cabinet or in contravention of any of the provisions of this chapter. [KRS 224.70-110]

Description of Non Compliance:
Failing to comply with 401 KAR 5:065, which cites 40 CFR 122.41(a), by failing to comply with the terms and conditions of KPDES Permit No. KY0102601, Outfall 001-1, for Total Suspended Solids (TSS) during the month of Sept 2011. The permitted limits for TSS Concentration are a monthly avg of 30 mg/l and a max weekly avg of 45 mg/l. The reported result was a max weekly avg of 51 mg/l.

The remedial measure(s), and date(s) to be completed by are as follows:
Lewis Co Sanitation District 1 shall comply with the terms and conditions of KPDES permit #KY0102601. The KDEP will continue to monitor your DMRs. [KRS 224.70-110]

2 Violation Description for Subject Item AIOO0000002705():
No person shall, directly or indirectly, throw, drain, run or otherwise discharge into any of the waters of the Commonwealth, or cause, permit or suffer to be thrown, drained, run or otherwise discharged into such waters any pollutant, or any substance that shall cause or contribute to the pollution of the waters of the Commonwealth in contravention of the standards adopted by the cabinet or in contravention of any of the rules, regulations, permits, or orders of the cabinet or in contravention of any of the provisions of this chapter. [KRS 224.70-110]

Description of Non Compliance:
Failing to comply with 401 KAR 5:065, which cites 40 CFR 122.41(a), by failing to comply with the terms and conditions of KPDES Permit No. KY0102601, Outfall 001-1, for Fecal Coliform Bacteria (FCB) during the month of Sept 2011. The permitted limits for FCB Concentration are a 30-day geometric mean of 200 colony-forming units per 100ml (c.f.u./100ml) of water and a 7-day geometric mean of 400 c.f.u./100ml. The reported results were a 7-day geometric mean of 474 c.f.u./100ml.

The remedial measure(s), and date(s) to be completed by are as follows:
Lewis Co Sanitation District 1 shall comply with the terms and conditions of KPDES permit #KY0102601. The KDEP will continue to monitor your DMRs. [KRS 224.70-110]

3 Violation Description for Subject Item AIOO0000002705():
No person shall, directly or indirectly, throw, drain, run or otherwise discharge into any of the waters of the Commonwealth, or cause, permit or suffer to be thrown, drained, run or otherwise discharged into such waters any pollutant, or any substance that shall cause or contribute to the pollution of the waters of the Commonwealth in contravention of the standards adopted by the cabinet or in contravention of any of the rules, regulations, permits, or orders of the cabinet or in contravention of any of the provisions of this chapter. [KRS 224.70-110]

Description of Non Compliance:
Failing to comply with 401 KAR 5:065, which cites 40 CFR 122.41(a), by failing to comply with the terms and conditions of KPDES Permit No. KY0102601, Outfall 001-1, for Suspended Solids Percent Removal (SS%) during the month of Apr 2011. The permitted limit for SS% Concentration is a monthly minimum of 85 percent (%). The reported result was a monthly minimum of 79%.

The remedial measure(s), and date(s) to be completed by are as follows:
Lewis Co Sanitation District 1 shall comply with the terms and conditions of KPDES permit #KY0102601. The KDEP will continue to monitor your DMRs. [KRS 224.70-110]

4 Violation Description for Subject Item AIOO0000002705():
No person shall, directly or indirectly, throw, drain, run or otherwise discharge into any of the waters of the Commonwealth, or cause, permit or suffer to be thrown, drained, run or otherwise discharged into such waters any pollutant, or any substance that shall cause or contribute to the pollution of the waters of the Commonwealth in contravention of the standards adopted by the cabinet or in contravention of any of the rules, regulations, permits, or orders of the cabinet or in contravention of any of the provisions of this chapter. [KRS 224.70-110]

Description of Non Compliance:
Failing to comply with 401 KAR 5:065, which cites 40 CFR 122.41(a), by failing to comply with the terms and conditions of KPDES Permit No. KY0102601, Outfall 001-1, for Total Ammonia Nitrogen (TAN) during the months of Mar, Apr and Nov 2011; Jan, Feb, Mar and Dec 2012; and Jan, Feb and Mar 2013. The permitted limits for TAN Loading during the months of Nov through Apr are a monthly avg of 10.4 lbs/day and a max weekly avg of 15.6 lbs/day. The reported results were a monthly avg of 10.9 lbs/day and a max weekly avg of 19.3 lbs/day for Mar 2011; a monthly avg of 17.1 lbs/day and a max weekly avg of 21.0 lbs/day for Apr 2011; a monthly avg of 11.0 lbs/day and a max weekly avg of 20.0 lbs/day for Nov 2011; a max weekly avg of 20.8 lbs/day for Jan 2012; a monthly avg of 10.9 lbs/day for Feb 2012; a monthly avg of 10.6 lbs/day for Mar 2012; a monthly avg of 10.9 lbs/day and a max weekly avg of 19.3 lbs/day for Dec 2012; a monthly avg of 12.4 lbs/day and a max weekly avg of 20.7 lbs/day for Jan 2013; a monthly avg of 14.19 lbs/day and a max weekly avg of 17.54 lbs/day for Feb 2013; and a monthly avg of 21.1 lbs/day and a max weekly avg of 30.1 lbs/day for Mar 2013.

The remedial measure(s), and date(s) to be completed by are as follows:
Lewis Co Sanitation District 1 shall comply with the terms and conditions of KPDES permit #KY0102601. The KDEP will continue to monitor your DMRs. [KRS 224.70-110]

5 Violation Description for Subject Item AIOO0000002705():
No person shall, directly or indirectly, throw, drain, run or otherwise discharge into any of the waters of the Commonwealth, or cause, permit or suffer to be thrown, drained, run or otherwise discharged into such waters any pollutant, or any substance that shall cause or contribute to the pollution of the waters of the Commonwealth in contravention of the standards adopted by the cabinet or in contravention of any of the rules, regulations, permits, or orders of the cabinet or in contravention of any of the provisions of this chapter. [KRS 224.70-110]

Description of Non Compliance:
Failing to comply with 401 KAR 5:065, which cites 40 CFR 122.41(a), by failing to comply with the terms and conditions of KPDES Permit No. KY0102601, Outfall 001-1, for Total Ammonia Nitrogen (TAN) during the months of Mar, Apr, Nov and Dec 2011; Jan, Feb, Mar, Apr, Nov and Dec 2012; and Apr 2013. The permitted limits for TAN Concentration during the months of Nov through Apr are a monthly avg of 10 mg/l and a max weekly avg of 15 mg/l. The reported results were a monthly avg of 11.2 mg/l and a max weekly avg of 16.8 mg/l for Mar 2011; a monthly avg of 11.9 mg/l for Apr 2011; a monthly avg of 18.8 mg/l and a max weekly avg of 22.4 mg/l for Nov 2011; a monthly avg of 11.8 mg/l for Dec 2011; a monthly avg of 18.3 mg/l and a max weekly avg of 21.0 mg/l for Jan 2012; a monthly avg of 22.0 mg/l and a max weekly avg of 23.5 mg/l for Feb 2012; a monthly avg of 22.3 mg/l and a max weekly avg of 24.6 mg/l for Mar 2012; a monthly avg of 23.3 mg/l and a max weekly avg of 27.4 mg/l for Apr 2012; a monthly avg of 16.2 mg/l and a max weekly avg of 19.9 mg/l for Nov 2012; a monthly avg of 23.5 mg/l and a max weekly avg of 25.5 mg/l for Dec 2012; and a monthly avg of 18.6 mg/l and a max weekly avg of 19.6 mg/l for Apr 2013.

The remedial measure(s), and date(s) to be completed by are as follows:
Lewis Co Sanitation District 1 shall comply with the terms and conditions of KPDES permit #KY0102601. The KDEP will continue to monitor your DMRs. [KRS 224.70-110]

6 Violation Description for Subject Item AIOO0000002705():
No person shall, directly or indirectly, throw, drain, run or otherwise discharge into any of the waters of the Commonwealth, or cause, permit or suffer to be thrown, drained, run or otherwise discharged into such waters any pollutant, or any substance that shall cause or contribute to the pollution of the waters of the Commonwealth in contravention of the standards adopted by the cabinet or in contravention of any of the rules, regulations, permits, or orders of the cabinet or in contravention of any of the provisions of this chapter. [KRS 224.70-110]

Description of Non Compliance:
Failing to comply with 401 KAR 5:065, which cites 40 CFR 122.41(a), by failing to comply with the terms and conditions of KPDES Permit No. KY0102601, Outfall 001-1, for Total Ammonia Nitrogen (TAN) during the months of May, Jun, Jul, Sept and Oct 2011; May, Jun, Jul, Sept and Oct 2012; and May and Jun 2013. The permitted limits for TAN Loading during the months of May through Oct are a monthly avg of 4.2 lbs/day and a max weekly avg of 6.3 lbs/day. The reported results were a monthly avg of 17.1 lbs/day and a max weekly avg of 21.9 lbs/day for May 2011; a monthly avg of 7.0 lbs/day and a max weekly avg of 10.3 lbs/day for Jun 2011; a max weekly avg of 7.80 lbs/day for Jul 2011; a monthly avg of 4.6 lbs/day and a max weekly avg of 7.3 lbs/day for Sept 2011; a monthly avg of 5.9 lbs/day and a max weekly avg of 8.8 lbs/day for Oct 2011; a monthly avg of 14.8 lbs/day and a max weekly avg of 19.7 lbs/day for May 2012; a monthly avg of 5.8 lbs/day and a max weekly avg of 7.2 lbs/day for Jun 2012; a monthly avg of 7.7 lbs/day and a max weekly avg of 14.3 lbs/day for Jul 2012; a monthly avg of 5.3 lbs/day and a max weekly avg of 7.0 lbs/day for Sept 2012; a monthly avg of 4.5 lbs/day and a max weekly avg of 6.7 lbs/day for Oct 2012; a monthly avg of 15.5 lbs/day and a max weekly avg of 24.1 lbs/day for May 2013; and a monthly avg of 5.8 lbs/day and a max weekly avg of 11.7 lbs/day for Jun 2013.

The remedial measure(s), and date(s) to be completed by are as follows:
Lewis Co Sanitation District 1 shall comply with the terms and conditions of KPDES permit #KY0102601. The KDEP will continue to monitor your DMRs. [KRS 224.70-110]

7 Violation Description for Subject Item AIOO0000002705():
No person shall, directly or indirectly, throw, drain, run or otherwise discharge into any of the waters of the Commonwealth, or cause, permit or suffer to be thrown, drained, run or otherwise discharged into such waters any pollutant, or any substance that shall cause or contribute to the pollution of the waters of the Commonwealth in contravention of the standards adopted by the cabinet or in contravention of any of the rules, regulations, permits, or orders of the cabinet or in contravention of any of the provisions of this chapter. [KRS 224.70-110]

Description of Non Compliance:
Failing to comply with 401 KAR 5:065, which cites 40 CFR 122.41(a), by failing to comply with the terms and conditions of KPDES Permit No. KY0102601, Outfall 001-1, for Total Ammonia Nitrogen (TAN) during the months of May, Jun, Jul, Sept and Oct 2011; May, Jun, Jul, Aug, Sept and Oct 2012; and May and Jun 2013. The permitted limits for TAN Concentration during the months of May through Oct are a monthly avg of 4 mg/l and a max weekly avg of 6 mg/l. The reported results were a monthly avg of 12.7 mg/l and a max weekly avg of 17.4 mg/l for May 2011; a monthly avg of 12.9 mg/l and a max weekly avg of 18.2 mg/l for Jun 2011; a monthly avg of 4.4 mg/l and a max weekly avg of 6.2 mg/l for Jul 2011; a monthly avg of 6.6 mg/l and a max weekly avg of 8.4 mg/l for Sept 2011; a monthly avg of 13.9 mg/l and a max weekly avg of 21.6 mg/l for Oct 2011; a monthly avg of 29.8 mg/l and a max weekly avg of 33.6 mg/l for May 2012; a monthly avg of 22.5 mg/l and a max weekly avg of 24.9 mg/l for Jun 2012; a monthly avg of 18.1mg/l and a max weekly avg of 25.2 mg/l for Jul 2012; a monthly avg of 9.4 mg/l and a max weekly avg of 10.9 mg/l for Aug 2012; a monthly avg of 12.2 mg/l and a max weekly avg of 15.1 mg/l for Sept 2012; a monthly avg of 12.4 mg/l and a max weekly avg of 12.9 mg/l for Oct 2012; a monthly avg of 22.4 mg/l and a max weekly avg of 25.5 mg/l for May 2013; and a monthly avg of 18.0 mg/l and a max weekly avg of 29.4 mg/l for Jun 2013.

The remedial measure(s), and date(s) to be completed by are as follows:
Lewis Co Sanitation District 1 shall comply with the terms and conditions of KPDES permit #KY0102601. The KDEP will continue to monitor your DMRs. [KRS 224.70-110]

8 Violation Description for Subject Item AIOO0000002705():
No person shall, directly or indirectly, throw, drain, run or otherwise discharge into any of the waters of the Commonwealth, or cause, permit or suffer to be thrown, drained, run or otherwise discharged into such waters any pollutant, or any substance that shall cause or contribute to the pollution of the waters of the Commonwealth in contravention of the standards adopted by the cabinet or in contravention of any of the rules, regulations, permits, or orders of the cabinet or in contravention of any of the provisions of this chapter. [KRS 224.70-110]

Description of Non Compliance:
Failing to comply with 401 KAR 5:065, which cites 40 CFR 122.41(a), by failing to comply with the terms and conditions of KPDES Permit No. KY0102601, Outfall 001-1, for Biochemical Oxygen Demand (BOD) during the month of Jun 2013. The permitted limits for BOD Concentration are a monthly avg of 25 mg/l and a max weekly avg of 38 mg/l. The reported results were a max weekly avg of 41 mg/l.

AI: Lewis Co Sanitation District 1 -- 2705

The remedial measure(s), and date(s) to be completed by are as follows:
Lewis Co Sanitation District 1 shall comply with the terms and conditions of KPDES permit #KY0102601. The KDEP will continue to monitor your DMRs. [KRS 224.70-110]

Violations of the above cited statute(s) and/or regulation(s) are subject to a civil penalty per day per violation. Violations carry civil penalties of up to $25,000 per day per violation depending on the statutes/regulations violated. In addition, violations may be concurrently enjoined. Compliance with remedial measures and their deadlines does not provide exemption from liability for violations during the period of remediation, nor prevent additional remedial measures from being required.

If you have questions or need further information, write or call the undersigned:

Department for Environmental Protection
Division of Enforcement
300 Fair Oaks Lane
Frankfort, KY 40601
502-564-2150 extension 3230 (8:45 AM – 4:45 PM)
Michelle Rice, Enforcement Specialist

Issued By: _____
Donald Polly
Environmental Enforcement Specialist
Compliance and Operations Branch
Date: October 30, 2013

Issued By: _____
Michelle M. Rice
Environmental Enforcement Specialist
Compliance and Operations Branch
Date: October 30, 2013

How Delivered: Certified Mail Certified/Registered # 7013 1090 0000 6752 6522

LemTec™ Biological Treatment Process

The Solution is Simple

Product Summary

LEMNA TECHNOLOGIES, INC.
2445 Park Avenue • Minneapolis, Minnesota USA 55404
Tel (612) 253-2002 • Fax (612) 253-2003
E-mail: techsales@lemna.com
Website: www.lemnatechnologies.com

LemTec™
Biological Treatment Process

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II. Applications	3-4
III. Treatment Process	5-6
IV. Features and Benefits	7

The Solution is Simple...

LemTec™ Biological Treatment Process

At Lemna, we specialize in simple solutions to complex problems.

If your existing wastewater treatment facility has problems meeting limits for BOD, TSS or NH_3, the LemTec™ Biological Treatment Process may be the answer.

Our patented LemTec™ Biological Treatment Process is an effective and affordable solution for pond-based municipal and industrial wastewater treatment facilities. This innovative process consists of a series of aerobic and anaerobic treatment cells that produce a high-quality effluent at a fraction of the cost of other traditional wastewater treatment systems.

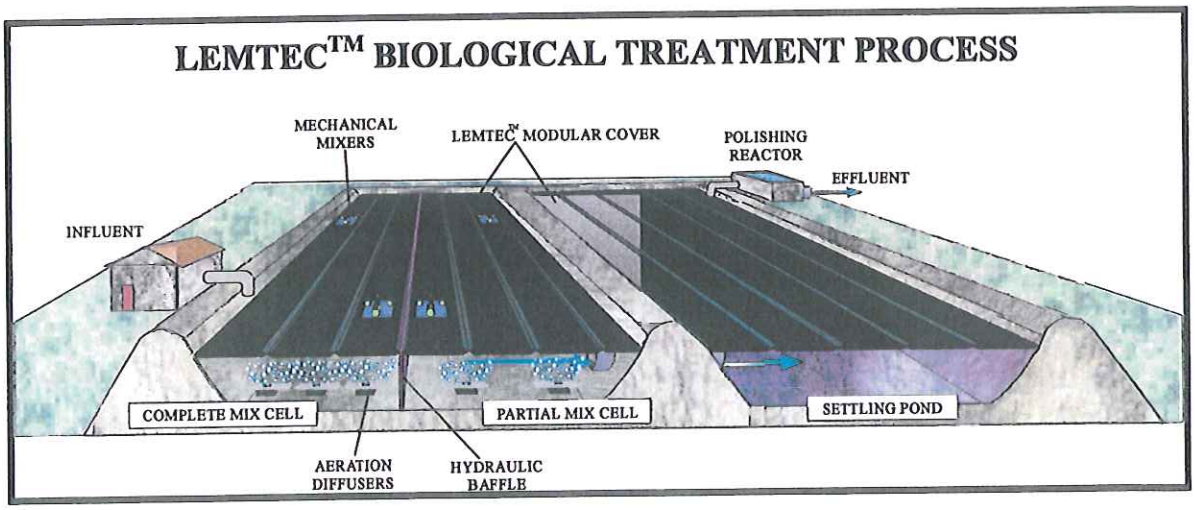
When compared to other pond-based technologies, the LemTec™ Biological Treatment Process is unmatched in its ability to meet stringent effluent limits that other traditional pond-based systems simply can't achieve.

With a reduced footprint, a process that is extremely reliable, and an operation that is virtually odor-free, the LemTec™ Biological Treatment Process is the highest performance pond-based package in the world.

When compared to traditional activated sludge facilities, LemTec™ again offers numerous advantages, including lower capital and operating costs, simple operation, expandability and low maintenance.

Whether upgrading an existing pond-based system or constructing a new facility, the LemTec™ Biological Treatment Process is competitively priced in flow ranges from 50,000 gpd to 5 mgd. With over 200 municipal and industrial installations worldwide, Lemna provides the experience and service to tackle any problem.

The LemTec™ Biological Treatment Process is your solution...It's that simple.



I. Introduction

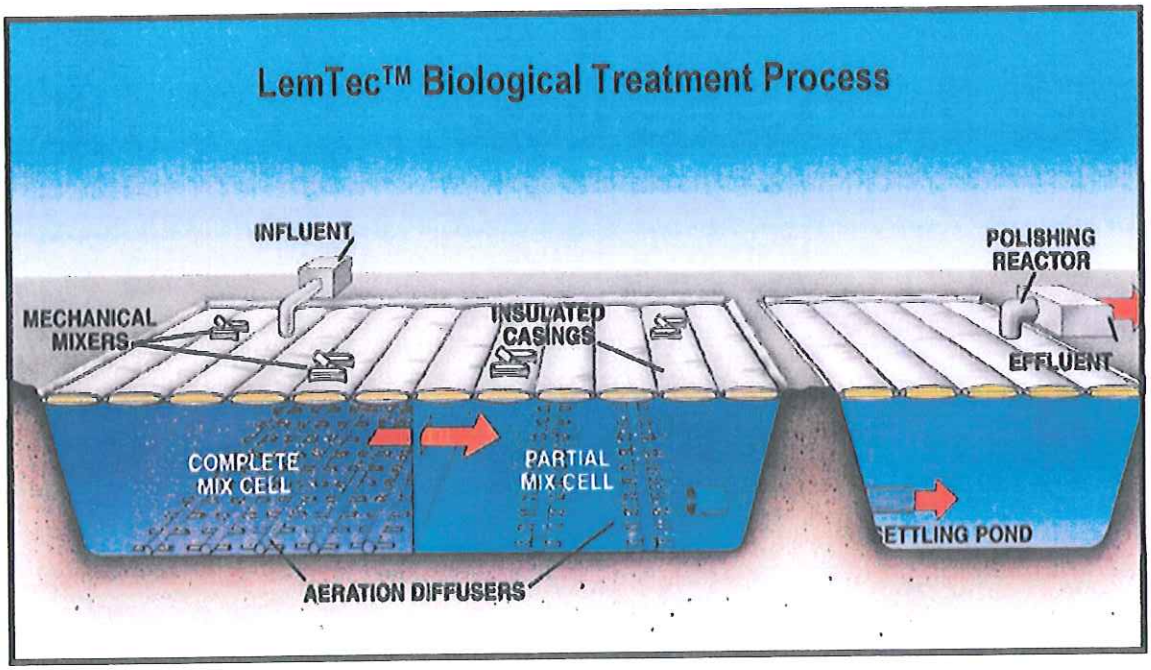
The LemTec™ Biological Treatment Process is a unique, pond-based technology capable of achieving stringent effluent standards not typically associated with pond systems. Developed and patented by Lemna Corporation, a worldwide leader in the development of innovative wastewater treatment systems, the LemTec™ Biological Treatment Process offers the advantages of activated sludge effluent quality without the cost and operating problems associated with activated sludge systems.

The LemTec™ Biological Treatment Process provides accelerated treatment of wastewater in simple, operator-friendly ponds that require minimal system operation and maintenance. Utilizing a series of aerobic treatment cells followed by an anaerobic settling zone and polishing reactor, the LemTec™ process is capable of achieving year-round effluent limits as low as 10 mg/l BOD, 10 mg/l TSS and 2 mg/l NH_3-N for typical municipal or pre-treated industrial wastewater.

PROCESS DESCRIPTION

The typical LemTec™ Biological Treatment Process incorporates the following simple process steps:

Screening → Complete-Mix cell → Partial-Mix cell → Settling Zone → Lemna Polishing Reactor



II. Applications

The LemTec™ Biological Treatment Process provides a cost-effective alternative for a variety of municipal and industrial applications, where high quality effluent is a criteria. The unique design offers several capital and operational advantages over other technologies in flow ranges from 50,000 gpd to 5 mgd. Effluent limits of 10 mg/l BOD, 10 mg/l TSS and 2 mg/l NH_3-N can easily be achieved in even the coldest climates. The LemTec™ design utilizes the LemTec™ Modular Cover System, a patented, insulated cover system that insulates the water column to maintain adequate temperature for effective treatment. This approach, along with the patented Lemna Polishing Reactor, allows the LemTec™ Biological Treatment Process to achieve limits other pond systems simply cannot.

The ability to achieve stringent limits within existing pond structures makes the LemTec™ Biological Treatment Process an attractive choice for retrofit applications. Utilizing existing basins rather than constructing new plants, has saved many Lemna clients significant capital expenditures.

The construction of new LemTec™ ponds is also frequently an attractive alternative to new plant construction in terms of both capital and on-going operational expenses. Other attractive features of the LemTec™ system including ease of operation, minimal maintenance, odor-free operation and high reliability make the LemTec™ solution a viable alternative to activated sludge type technologies.

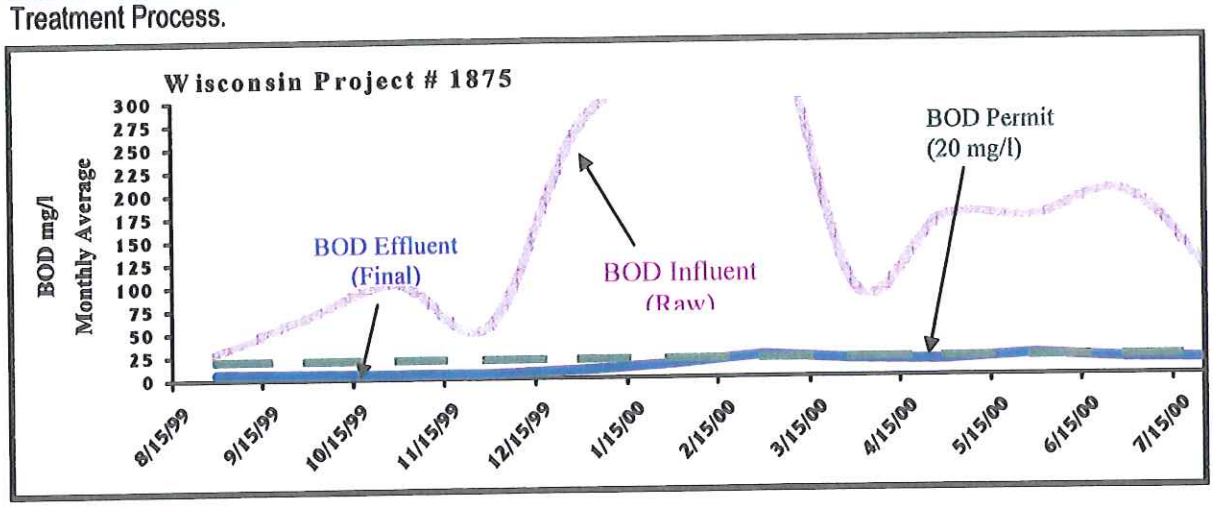
LemTec™ Biological Treatment Process

Complete Mix Cell
Pond #1

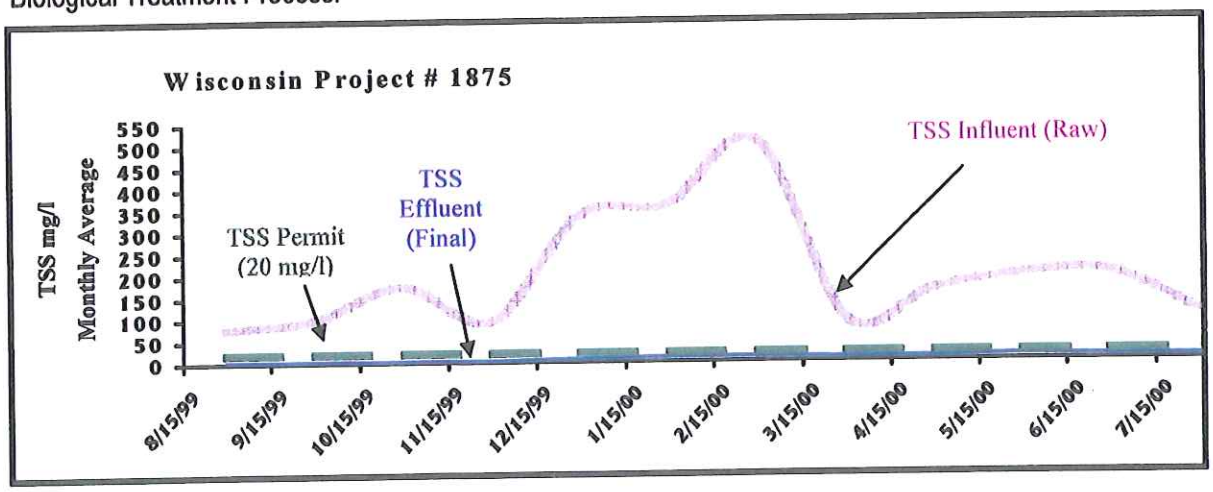
Partial Mix Cell
Pond #2

Settling Pond with
External LPR
Pond #3

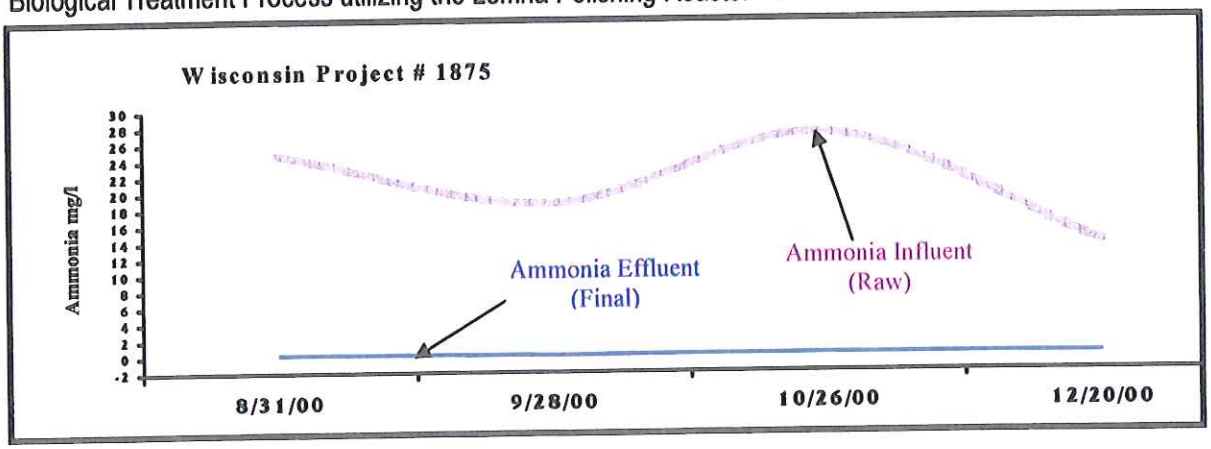
BOD REDUCTION The following illustrates the BOD reduction capabilities of the LemTec™ Biological Treatment Process.



TSS REDUCTION The following illustrates the algae/TSS reduction capabilities of the LemTec™ Biological Treatment Process.

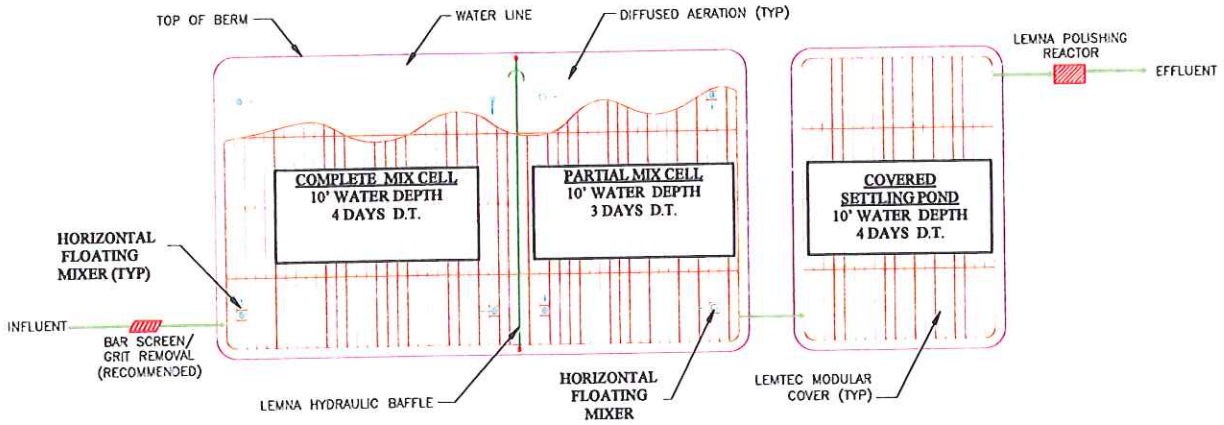


AMMONIA REDUCTION The following illustrates the ammonia reduction capabilities of the LemTec™ Biological Treatment Process utilizing the Lemna Polishing Reactor™.



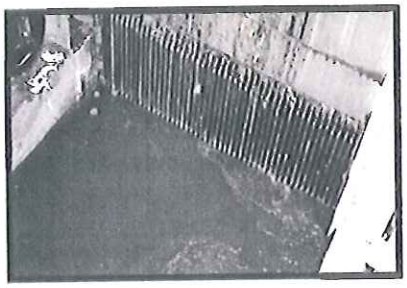
III. Treatment Process

The design of the LemTec™ Biological Treatment Process is extremely flexible and adaptable to existing structures and also allows for future expansion, often times within the existing structures or with minimal civil adaptation. The LemTec™ System typically flows through the following unit processes.



Unit Process I: Screening Phase

The first unit process step (Screening Phase) is required to ensure capture of solid matter greater than 1/4" in size. Reducing solids size is important in providing effective treatment in reducing the wear on downstream equipment. Depending upon the application and/or the client's preferences, screens are offered in varied degrees of automation, from 100% manual to 100% automated.



Unit Process II: Complete Mix Phase

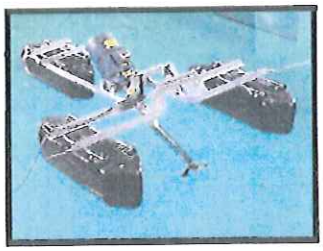
The second unit process step (Complete Mix Phase) is a complete mix/aggressive mix cell with a typical hydraulic detention time of four days. Aeration is provided by flexible membrane, fine bubble diffusers and floating mechanical mixers provide required mixing.

Typically, the complete mix cell is covered with a LemTec™ Modular Cover for heat retention. Most often a Lemna Hydraulic Baffle is used to divide the complete mix cell from the partial mix cell of Unit Process III. Soluble BOD is typically reduced from 200 mg/l to 40 mg/l in this first phase.

Unit Process III: Partial Mix Phase

In the third unit process step (Partial Mix Phase), again aeration is provided by fine bubble diffusers and/or floating aspirator/mixers. In the partial mix cell, sufficient aeration is provided to reduce BOD and keep solids in suspension and the cell is sized to allow for three days of detention time. As in the complete mix cell, the partial mix cell is covered with a LemTec™ Modular Cover and soluble BOD is typically reduced to 25 mg/l in this phase.

Diffuser



Floating Mixer

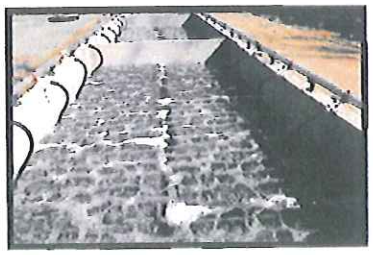
Unit Process IV: Settling Phase

The fourth unit process (Settling Phase) is necessary for the aerated effluent to meet the minimum standards for secondary and tertiary treatment. This quiescent anaerobic zone settles out the suspended solids produced in the prior phases and prepares the effluent for final polishing in Unit Process V. The settling zone is covered with a LemTec™ Modular Cover to prevent algae and reduce odors and is typically sized to allow for a detention time for four days. This sizing also allows sufficient area for accumulation of sludge for five to eleven years. Effluent leaving the settling zone is typically 20 mg/l BOD and 15 mg/l TSS.

Unit Process V: Polishing Phase

The final phase of the LemTec™ Biological Treatment Process is the polishing phase (unless disinfection is required). In this phase, the wastewater flows through a concrete structure in which the Lemna Polishing Reactor (LPR) is housed. The LPR is a patented reactor consisting of aerated, submerged, attached-growth media modules, which maintain an adequate population of bacteria for final polishing of the effluent. The LPR process starts with pre-aeration diffusers required to raise dissolved oxygen levels and the modules are sized to remove residual BOD and to provide nitrification for NH_3-N removal,

Lemna Polishing Reactor (LPR): Aerated, submerged, attached-growth media modules used for supplemental BOD and ammonia-nitrogen (NH_3-N) reduction.



IV. Features and Benefits

The LemTec™ Biological Treatment Process offers the following advantages over other pond-based or activated sludge systems.

LOW CAPITAL COST The LemTec™ System most often represents the lowest capital cost option, within certain size and effluent ranges, of any other technology for new construction or upgrades.

LOW OPERATIONAL COST Due to the absence of sophisticated systems, equipment and daily sludge disposal, the LemTec™ System represents the lowest operational cost option on the market.

HIGH QUALITY EFFLUENT The LemTec™ Biological Treatment Process is a proven technology capable of achieving the most stringent effluent standards (comparable to activated sludge capabilities).

EASE OF OPERATION Since there are no complex operating parameters to monitor and adjust and no complicated sludge processing, lower skilled operators are sufficient for effective operations.

REDUCED FOOTPRINT Due to the accelerated nature of the LemTec™ Biological Process, the area required for effective treatment is dramatically reduced. This results in a reduction of land use, basin sizes and overall capital cost.

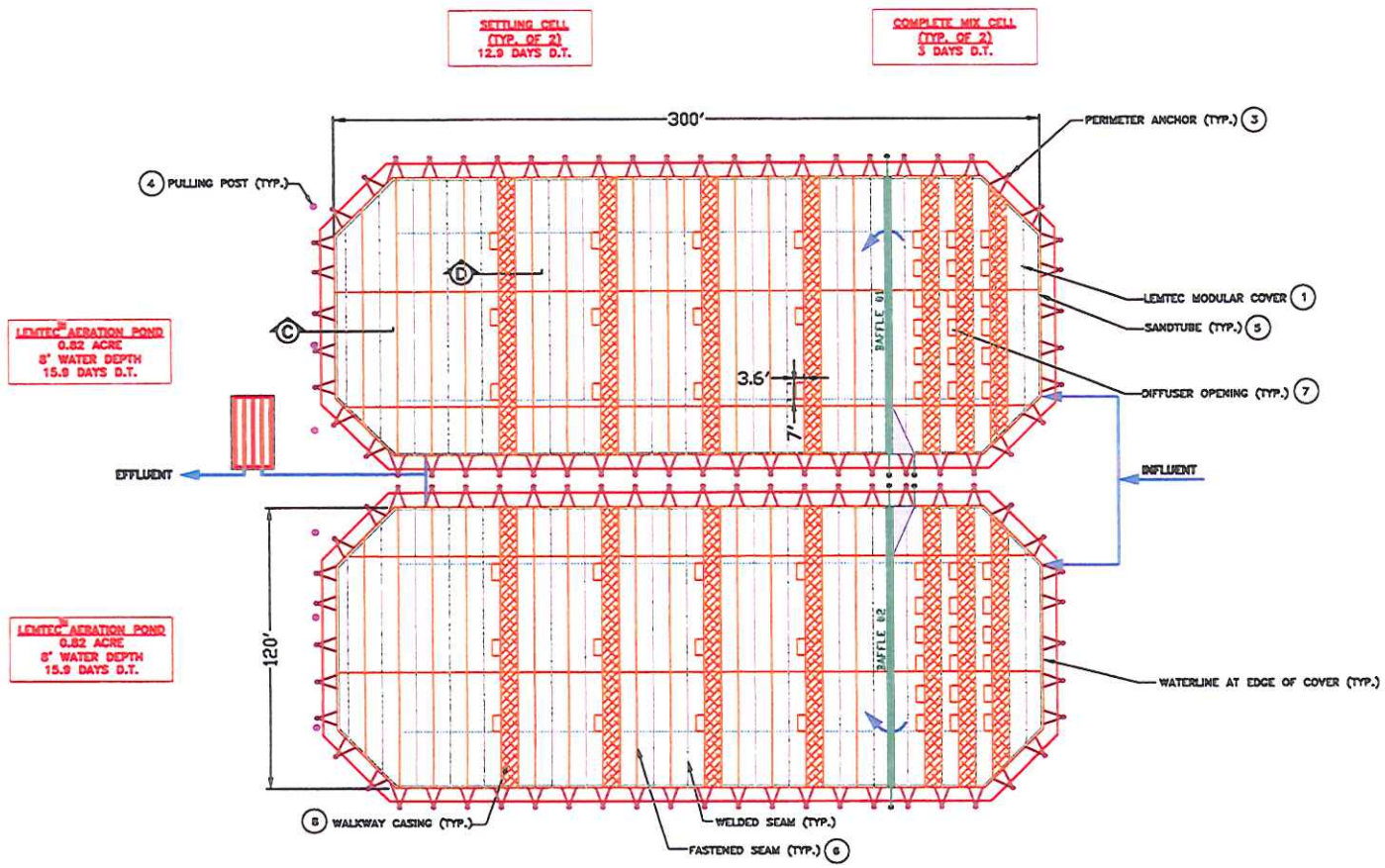
COVERED SYSTEM ADVANTAGES The covered LemTec™ Process offers many advantages over other systems (including accelerated treatment kinetics due to the maintenance of higher temperature, the ability to nitrify and reduce ammonia year-round, algae reduction, evaporation control and odor reduction).

REDUCED SLUDGE HANDLING Since all LemTec™ Systems are designed to accommodate the accumulated sludge, actual sludge disposal is only necessary every five to twelve years (actual time depending upon client requirements). Compared to other systems where daily sludge handling is required, the LemTec™ system is easier and less costly to operate.

FLEXIBILITY The LemTec™ Process offers a competitive solution for most municipal, industrial, new construction or retrofit applications. The reliability and stability of the process allows for hydraulic loading variations, temperature fluctuations and organic surges more effectively than other technologies.

EXPANDABILITY Often times, existing LemTec™ Systems can be expanded in the future to allow for additional population growth (increased flow) or stricter effluent standards with a minimal amount of capital cost. Other systems typically cannot expand without major capital outlays.

For more information regarding the LemTec™ Biological Treatment Process or any other innovative technologies offered by Lemna Technologies, Inc., please contact a Lemna Sales Representative at 612-253-2002.



NOTE:
1. COVER: R-5 INSULATION, 40mil HDPE.
2. FINAL COVER DIMENSIONS AND COVER FABRICATION LAYOUT WILL BE PROVIDED AFTER THE SURVEY.
3. ALL PERSONNEL SHALL WEAR OSHA APPROVED PERSONAL FLOTATION DEVICE WHEN WORKING ON OR NEAR WASTEWATER PONDS.

THIS DESIGN IS PROPRIETARY TO LEMNA TECHNOLOGIES, INC. AND IS SOLELY INTENDED FOR APPLICATION AT TOLLESBORO, KENTUCKY BY LEMNA TECHNOLOGIES, INC. THIS DESIGN CANNOT BE USED BY A THIRD PARTY NOR REPRODUCED, IN FULL OR IN PART, WITHOUT THE WRITTEN AUTHORIZATION OF LEMNA TECHNOLOGIES, INC.

No.	REVISIONS:	DATE	No.	REVISIONS:	DATE
1	PLANS AND SPECS	05/01/09	1		
2	PLANS, NEW DESIGN	07/05/12	2		
3	NEW DESIGN, NEW FLOW	04/05/13	3		
4			4		
5			5		

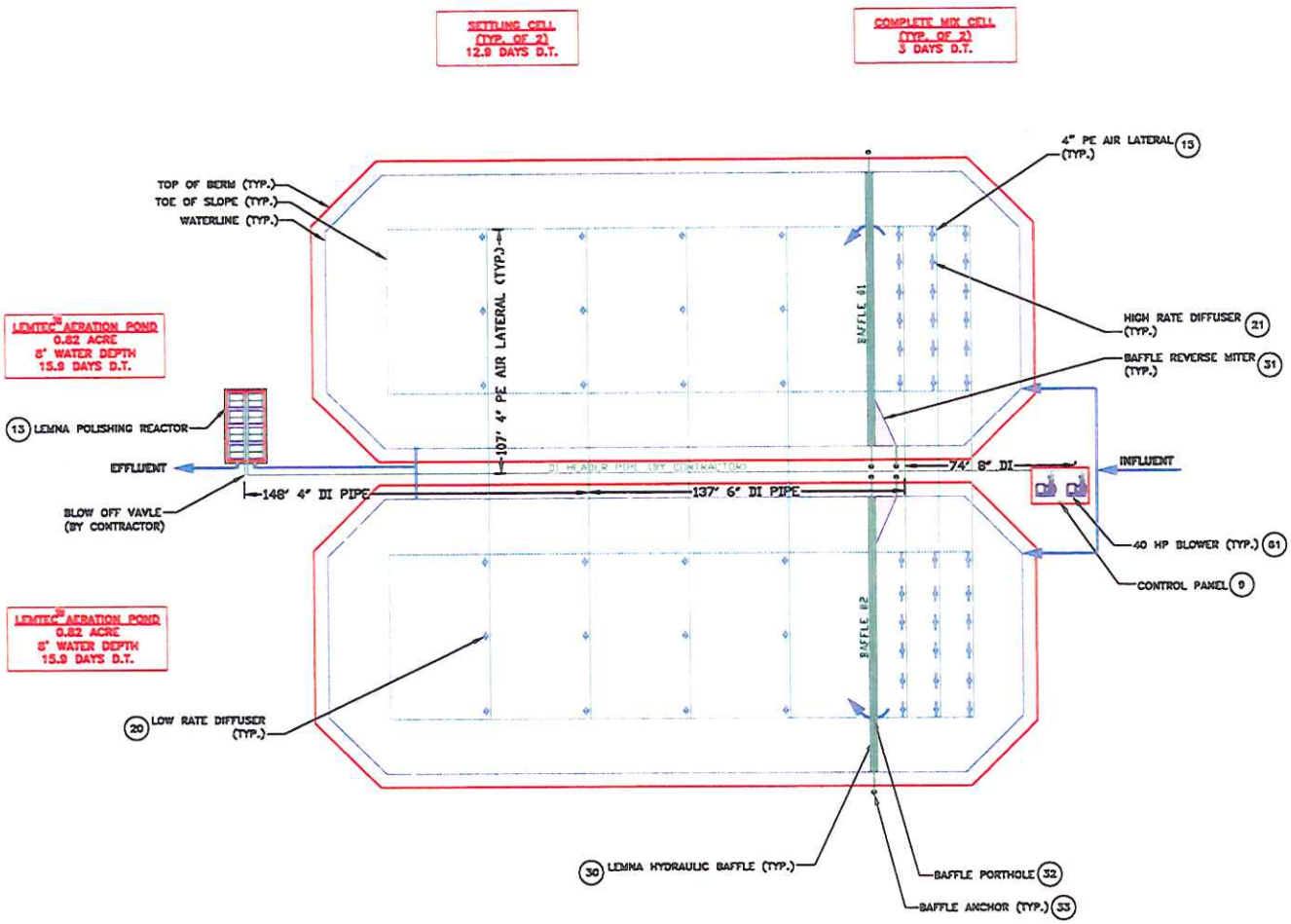
LEMTEC™ BIOLOGICAL TREATMENT PROCESS
TOLLESBORO, KENTUCKY

MODULAR COVER LAYOUT

LEMNA TECHNOLOGIES
2448 PARK AVENUE SOUTH
MINNEAPOLIS, MINNESOTA 55404
TEL:(612) 253-2002
FAX:(612) 253-2003

DRAWN: MS
DESIGNED: DAP
CHECKED: JAM
PROJECT NUMBER:
SCALE: NOT TO SCALE
DATE: APRIL 2013

SHEET NUMBER: TOL-03



NOTE:
DI PIPE DIMENSIONS TO BE VERIFIED BY THE ENGINEER AND SUPPLIED BY CONTRACTOR.

THIS DESIGN IS PROPRIETARY TO LEMNA TECHNOLOGIES, INC. AND IS SOLELY INTENDED FOR APPLICATION AT TOLLESBORO, KENTUCKY BY LEMNA TECHNOLOGIES, INC. THIS DESIGN CANNOT BE USED BY A THIRD PARTY NOR REPRODUCED, IN FULL OR IN PART, WITHOUT THE WRITTEN AUTHORIZATION OF LEMNA TECHNOLOGIES, INC.

No.	REVISIONS:	DATE	No.	REVISIONS:	DATE
1	PLANS AND SPECS	03/01/09	1		
2	PLANS, NEW DESIGN	07/02/12	2		
3	NEW DESIGN, NEW FLOW	04/02/13	3		
4			4		
5			5		

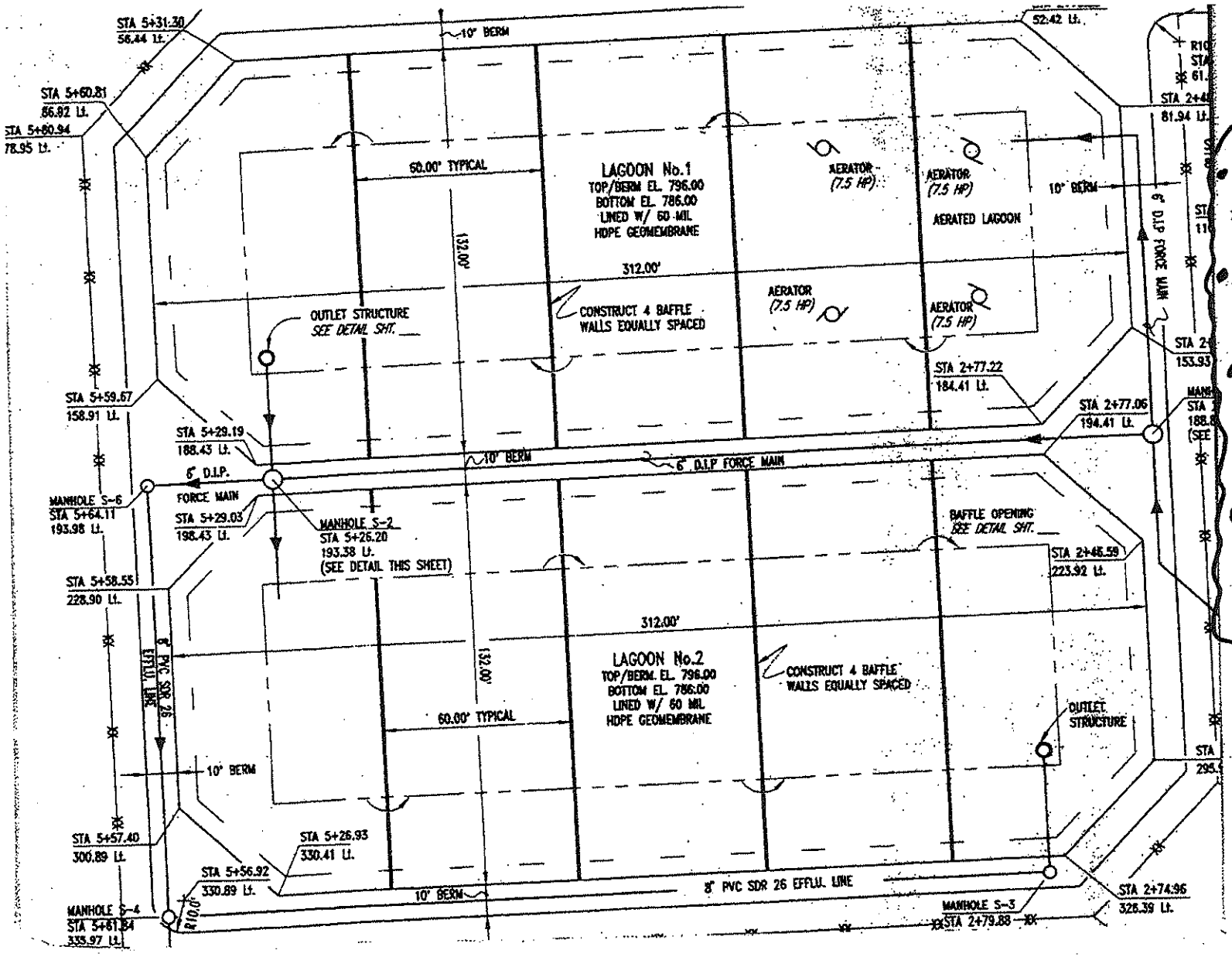
LEMTEC™ BIOLOGICAL TREATMENT PROCESS
TOLLESBORO, KENTUCKY

AERATION LAYOUT

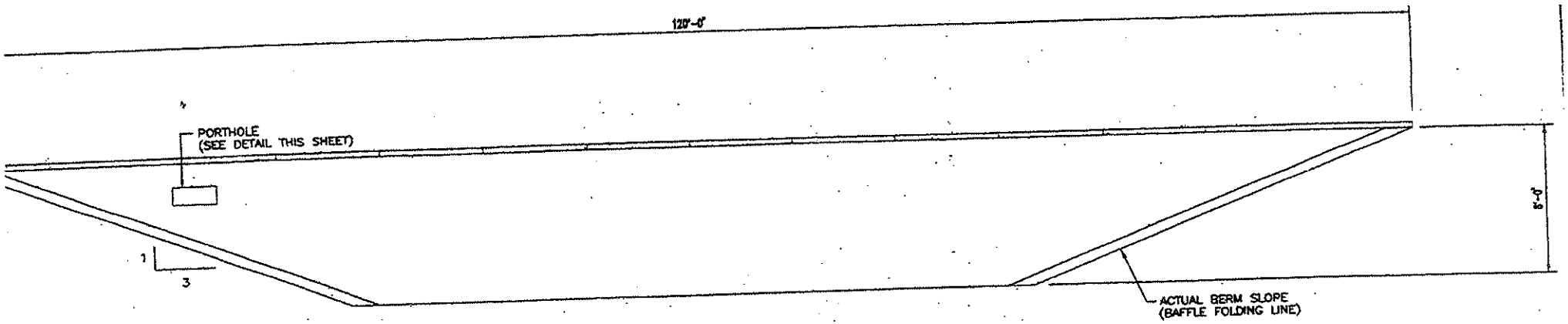
LEMNA TECHNOLOGIES
2445 PARK AVENUE SOUTH
MINNEAPOLIS, MINNESOTA 55404
TEL:(612) 253-2000
FAX:(612) 253-2003

DRAWN: MS
DESIGNED: DAP
CHECKED: JAM
PROJECT NUMBER:
SCALE: NOT TO SCALE
DATE: APRIL 2013

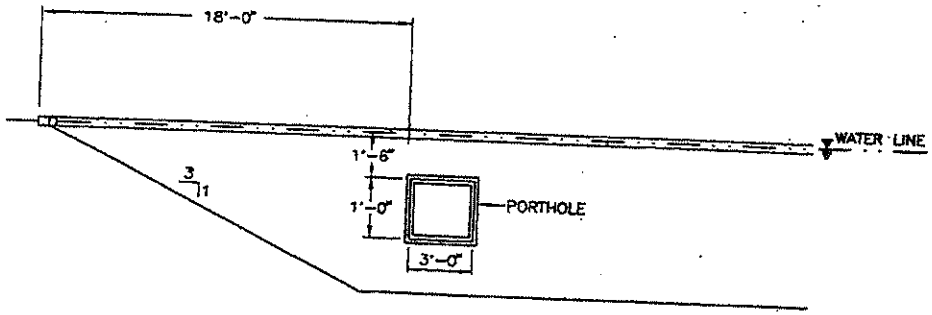
SHEET NUMBER: TOL-04



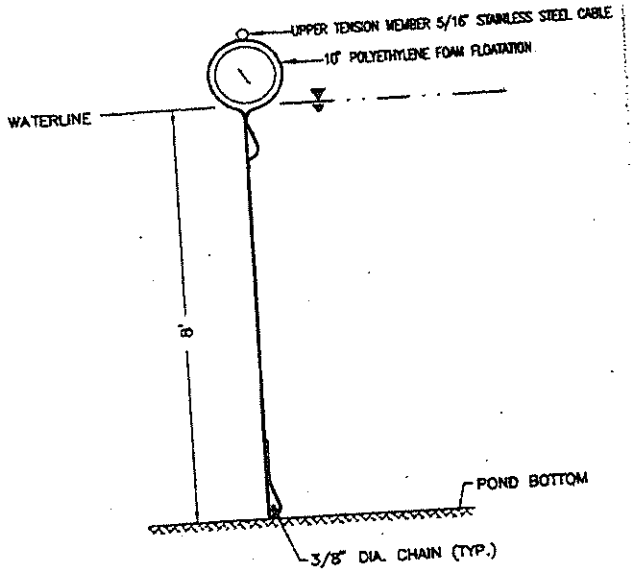
- 2 lagoons each 312'L x 132'W x 8' SWD
- Lagoon 1: 4 7.5hp surface aerators
- Lagoon 1 + 2 each have 4 132'L floating baffles
- 3:1 slopes
- Lagoon bottom to top of berm = 10'.



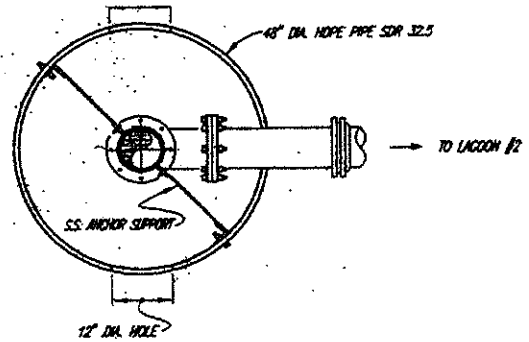
TYPICAL BAFFLE ELEVATION



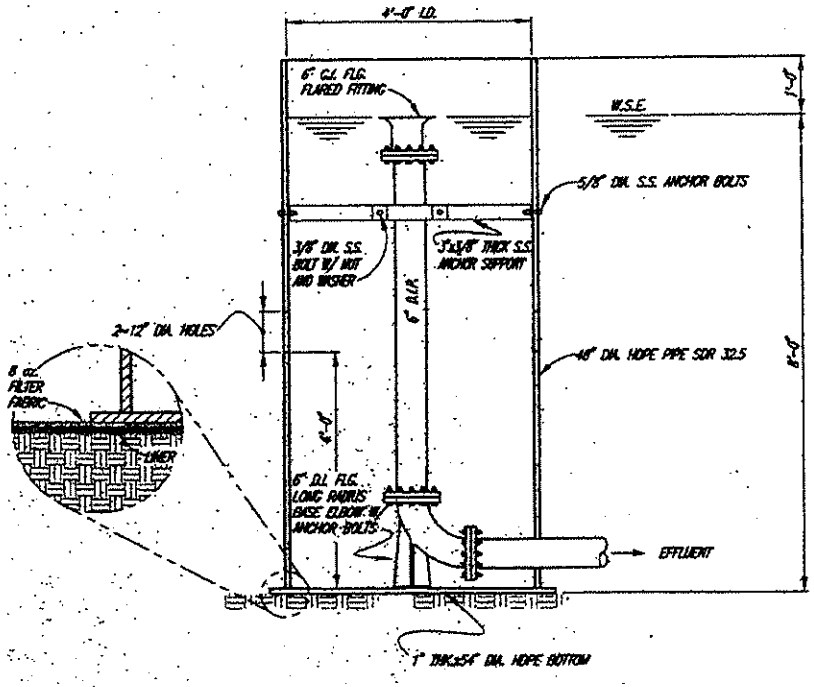
PORTHOLE DETAIL



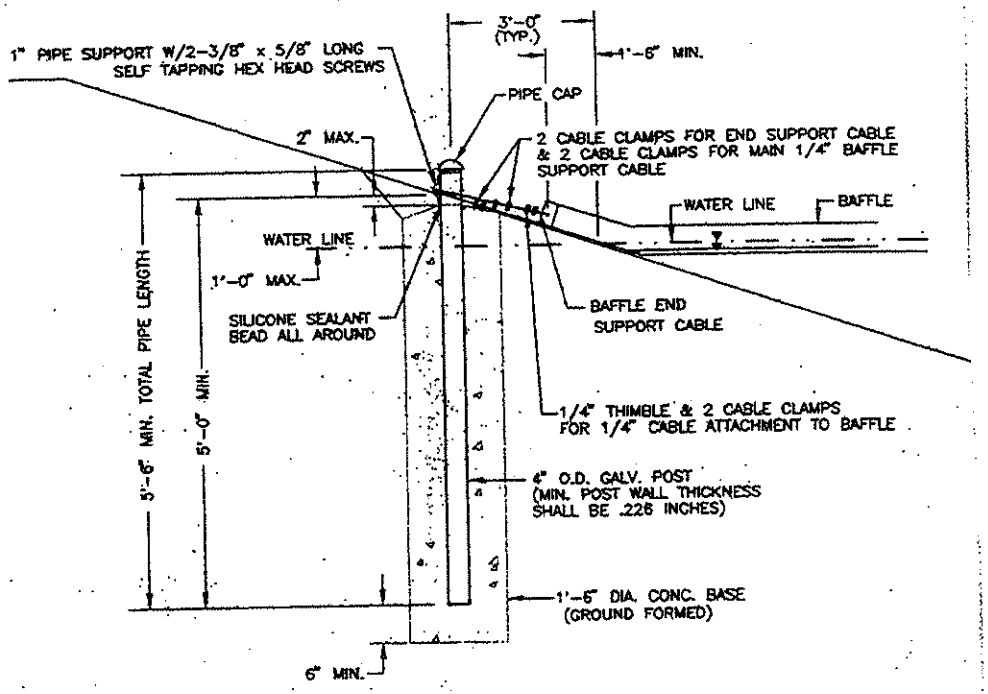
BAFFLE SECTION



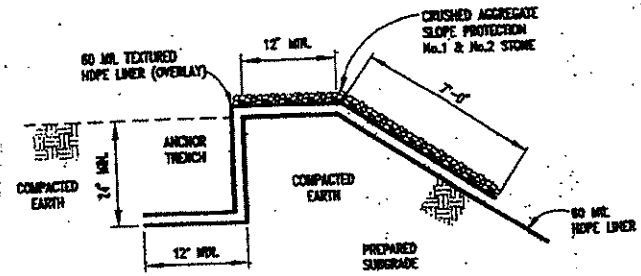
-PLAN-
-OUTLET STRUCTURE-
SCALE: 1/2" =1'-0"



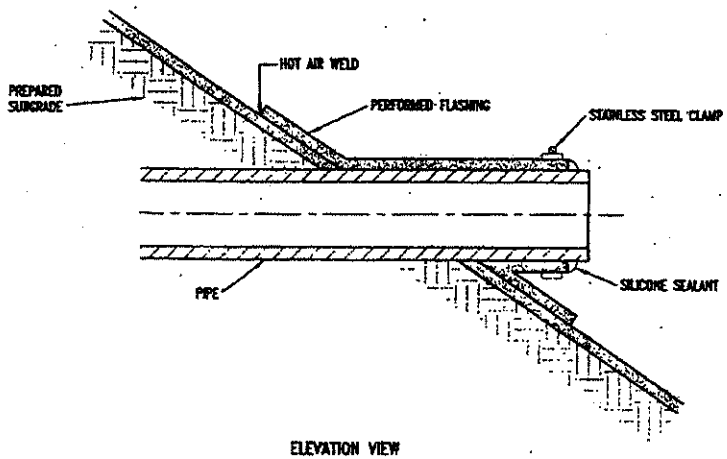
-SECTION-
-OUTLET STRUCTURE-
SCALE: 1/2" =1'-0"



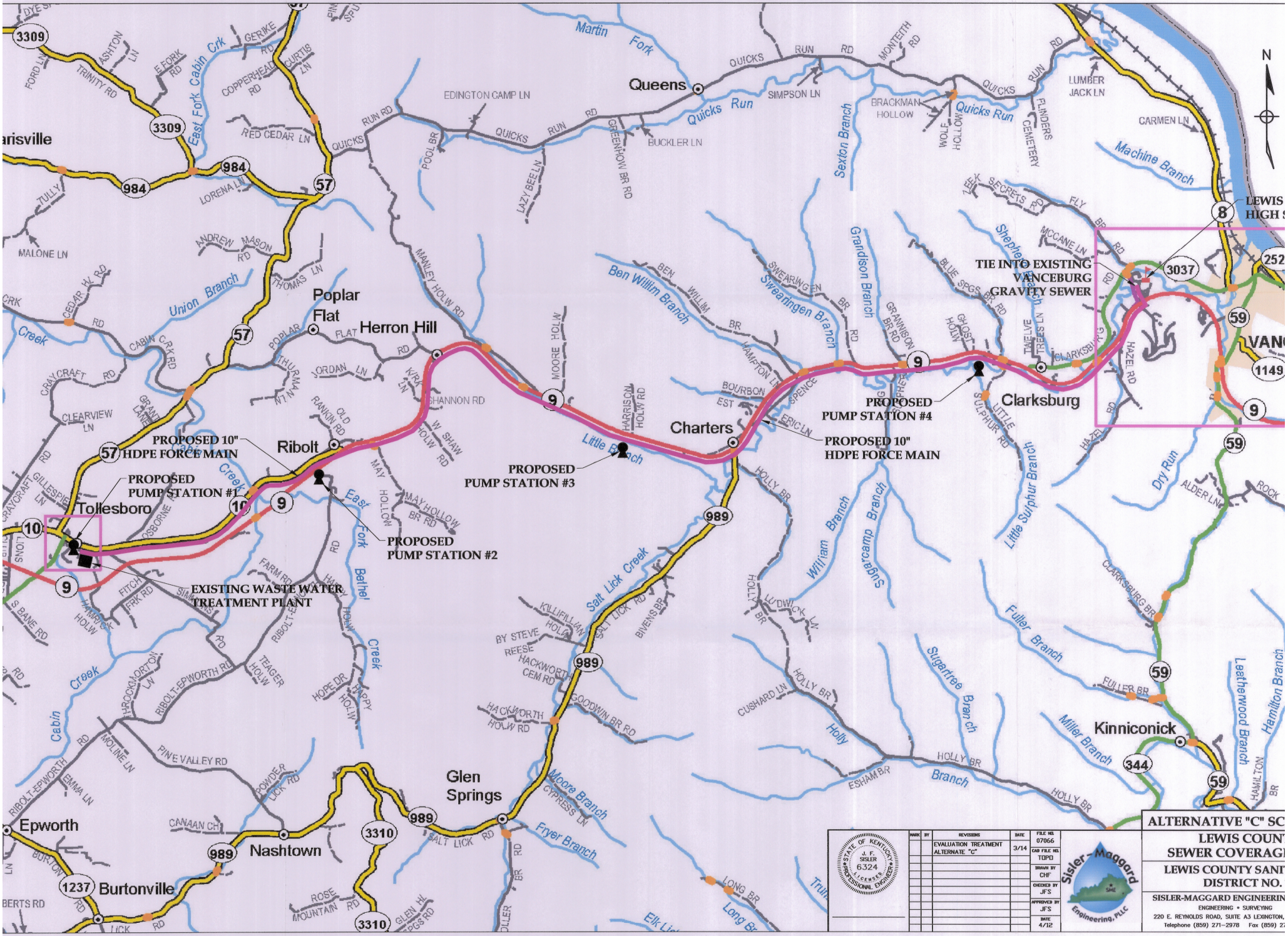
TYPICAL BAFFLE ANCHOR POST DETAIL
(SAME AS ASPIRATOR ANCHOR POST)



ELEVATION VIEW
TYPICAL ANCHOR DETAILS
FOR LINER
N.T.S.



ELEVATION VIEW
TYPICAL PIPE PUNCTURE
SEAL DETAIL FOR LINER
N.T.S.


PROPOSED 10" HDPE FORCE MAIN
PROPOSED PUMP STATION #1
PROPOSED PUMP STATION #2
PROPOSED PUMP STATION #3
PROPOSED PUMP STATION #4
PROPOSED 10" HDPE FORCE MAIN
EXISTING WASTE WATER TREATMENT PLANT
TIE INTO EXISTING VANCEBURG GRAVITY SEWER
Tollesboro
Ribolt
Poplar Flat
Herron Hill
Charters
Queens
Clarksburg
Glen Springs
Nashtown
Burtonville
Epworth
Kinniconick
N
ALTERNATIVE "C" SC
LEWIS COUNT
SEWER COVERAGE
LEWIS COUNTY SANI
DISTRICT NO.
SISLER-MAGGARD ENGINEERIN
ENGINEERING • SURVEYING
220 E. REYNOLDS ROAD, SUITE A3 LEXINGTON,
Telephone (859) 271-2978 Fax (859) 27
STATE OF KENTUCKY
J. F. SISLER
6324
LICENSED
PROFESSIONAL ENGINEER
REVISIONS
EVALUATION TREATMENT ALTERNATE "C"
DATE 3/14
FILE NO. 07066
CAD FILE NO. TOPO
DRAWN BY CHF
CHECKED BY JFS
APPROVED BY JFS
DATE 4/12
Sisler-Maggard Engineering, PLLC